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A POSSIBLE PRE-ALGONKIAN CULTURE IN SOUTHEASTERN MASSACHUSETTS

BY EDMUND BURKE DELABARRE

THE Algonkian tribes who occupied New England at the time when its known history began were probably not its earliest inhabitants. Remains of what may have been a pre-Algonkian culture have been discovered, notably that of the so-called Red Paint People of Maine. No indication, however, is given as to when these people flourished, and but little as to when the Algonkians themselves first arrived and displaced them. There is evident value in any discovery that contributes even slightly to the problem of determining how long this portion of the country has been inhabited. The writer believes that he has found evidence that some tribe, whether Algonkian or pre-Algonkian he does not know, was living in southeastern Massachusetts at least a thousand years ago. The evidence is in the form of numerous stone implements, of such variety as to indicate a probable village site, lying scattered widely over a surface that is now covered by a deposit of several feet of salt-water peat.[1]

Grassy Island in Taunton River is the site of these deposits. It is in the town of Berkley, in a shallow broadening of the river called Smith's Cove, which lies between that town on the east and Dighton on the west. The southerly projection of Berkley, a peninsula two miles long between the Taunton and Assonet rivers, is known as Assonet Neck. This place is noted as having been, together with Mount Hope in Bristol, Rhode Island, the last land retained for their own exclusive use Indians; also, as being bordered by extensiv which were the first source of hay for the early and, finally and most widely, as the locatic scribed Dighton Rock, situated near its nor the edge of Smith's Cove. The island is abou of this rock.

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[1] Abner Morse, in Traces of Ancient Northmen in America, 1861, describes ancient hearths found under four feet of peat on Cape Cod. If he was correct as to their nature, they seem to give evidence of another inhabited site at about the same period as that of the one here described, although there is no need to accept his assumption that they were constructed by Northmen.

Since 1640, when Grassy Island was firs dividual owner as of value for its hay, the have always described it as comprising three a although at the present time it contains but acre. It is roughly triangular in shape, wit 550 feet and a greatest width of 260 feet. It is at the highest tides, and its level surface is c salt-marsh growths, underneath which there what was once doubtless an exposed surfac growths began, but which is now exposed along the edges of the island where the peat This "ancient surface," as I shall call it, is sa somewhat stony soil, sloping slightly downwa at the rate of about one foot in 200; and thus peat above it is five feet at the southerly end only about 2½ feet at the northerly end. Alo most exposed edge of the island, erosion by fiddler crabs, continually but slowly weaken the peat, so that from time to time sections of washed away, leaving the remaining edge of p with a sandy beach at its foot, where the line c ancient surface and later peat-growth is clea general appearance thus produced can be seen our illustrations.

My attention was called to this island b pocket of Indian relics had been found the twenty years ago, from which something like mens had been removed. During the last seven occasional visits to the island, about seventy-fi able periods of low tide, and have secured nu

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from the beach and by excavation underneath the peat along the exposed edge. I made an attempt to mark off the excavation work into measured sections and thus to definitely locate each find, but shortly abandoned it, partly because of the difficulty of maintaining stakes subject to the wash of tides and sure to be broken by ice in the winter, and largely because there appeared to be little or no significance in the relative positions of the objects found. Apart from those already washed out and picked up from the beach, these were all discovered lying upon the ancient surface and to a depth of some nine inches below it, scattered irregularly about through a length of about 300 feet and a width extending as far as excavation was made, which in some places reached to as much as fifteen or twenty feet. The impression produced was that of a village or encampment site, where in the course of time numerous articles were left about in a haphazard manner, or thrown away when broken. This interpretation is strengthened by the character of the artifacts, many of them being such as would naturally occur, at least in such numbers and variety, only at a place of residence,—such as mortars and grinding-stones, and likewise very numerous chips, cores and unfinished pieces indicating a place of manufacture. A considerable length of occupation seems to be attested by the number of articles accumulated on the site, and perhaps by the depth to which some of them lie buried. It is impossible to form any idea as to the actual extent of the occupied area, inasmuch as only about 1000 square feet of it have been uncovered, which is probably a very small proportion of the whole. For this reason the objects thus far discovered may be far from adequately representative of the character of the culture there exhibited.

A large number of chips, flakes, broken fragments, cores, and unworked pebbles of materials used in manufacture, are found everywhere on the site.[2] Besides these, I have gathered approximately 400 artefacts, about half of which were dug out and observed *in situ*, the rest being from the beach. The accompanying plates exhibit representative specimens of them. About three-fourths of them are chipped objects: arrowheads, spear-heads, knives, perforators. Many of these are shown in Groups A,[3] B, and E (Plates I-III). Most of them are rather small or ordinary in size, only a very few broken pieces having been found which were parts of larger spear-heads. The largest shown are: in Group B, ninth in next to last row, an unusually perfect one of rhyolite, nearly four inches long; in Group E, bottom row, numbers 2 and 4, each about 4½ inches long, and number 3, broken both ends, which must have been a very long one. Beyond these in the same row are pictured two others that were probably long. They are of all grades of skill in workmanship, some of them very excellent, and do not differ noticeably in this respect from the products of later Indian art. There is, however, one respect in which these earlier forms differ from later ones, which is interesting and perhaps significant. The Grassy Island Indians made a smaller proportion of their arrow-heads of triangular shape (Division II of Wilson's classification) and a larger proportion of them stemmed (Division III), than did the later local Wampanoags; and made a very much smaller proportion of them of quartz and a much larger proportion of other kinds of stone, if my observations are representative. There are two localities on or near Assonet Neck where I find numerous arrow-heads in ploughed fields and which I judge to have been inhabited sites, one of them near Grassy Island and the Taunton River, the other across the Neck on the Assonet River side. The following Table shows the

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[2] In four scattered places, for instance, which were carefully worked over, covering about 42 square feet, I counted 44 unworked pebbles of quartz, one of them over four inches long, 61 quartz pieces that showed some marks of flaking, 7 green shale chips, and 9 chipped objects. Chips and cores, as well as finished objects, were found in considerable numbers as much as 8 or 9 inches below the surface.

	Number of specimens	Percentage of:			
		Shape II	Shape III	Quartz	Non-quartz
Grassy Island (ancient)	265	17	83	39	61
Taunton River site (Wampanoag)	286	25	75	72	28
Assonet River site (Wampanoag)	612	83	17	89	11

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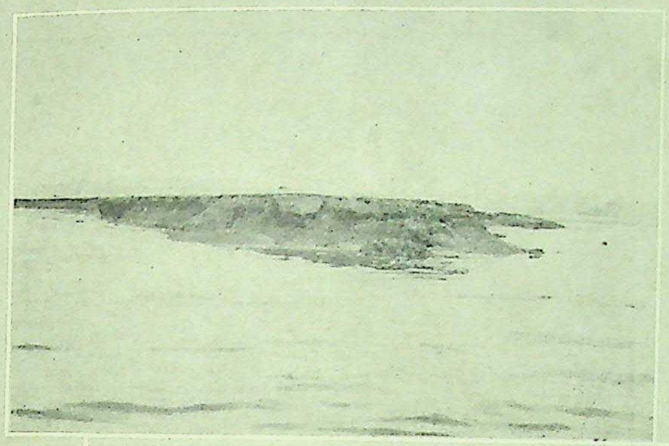
[3] In Group A a few were accidentally included which did not come from Grassy Island: in first row, nos. 2, 3, 5, 6; second row, nos. 2, 5, 9; third row, nos. 1, 5, 9.



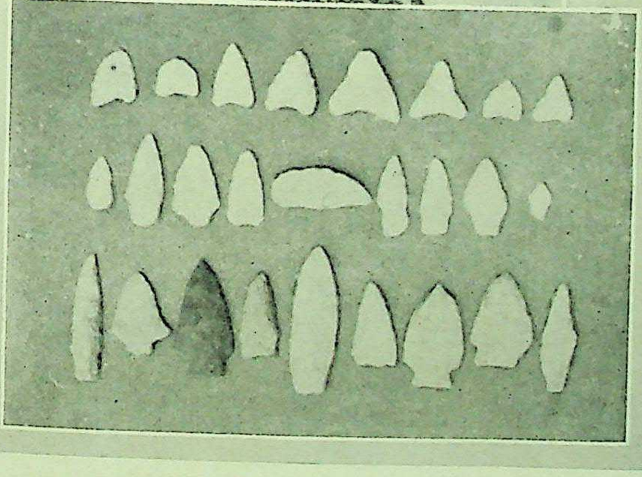


PLATE I

1. Grassy Island from the South.
2. West Shore of Grassy Island, Looking Southward.
3. Artifacts from Grassy Island: Group A.

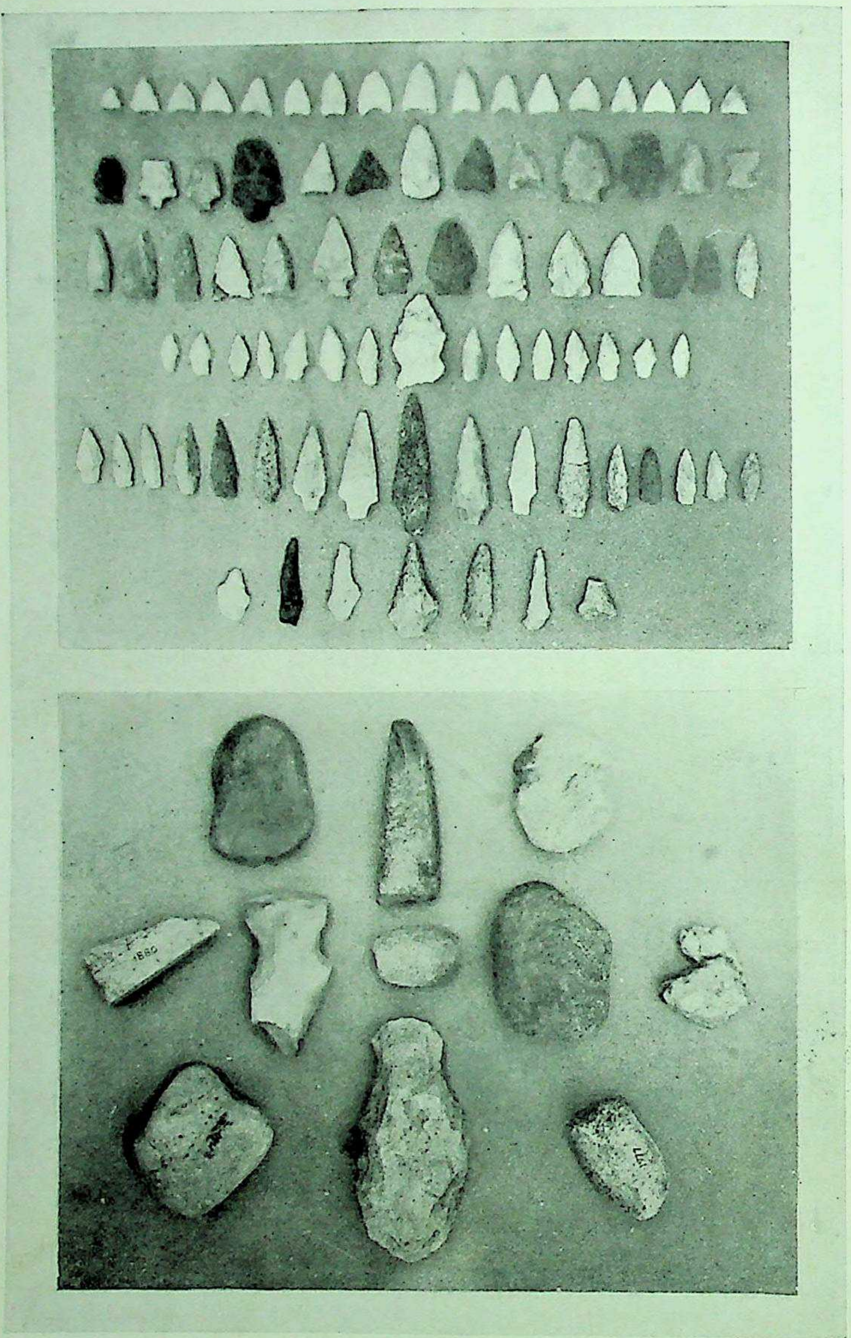


Plate II
Artifacts from Grassy Island: Groups B and C.

basis for the above statement, and also exhibits a marked difference between the two more recent sites.

About two-fifths of the arrow-heads were made of quartz. The most predominant other material was an attractive looking fine-grained green shale which weathers into a light gray, of which one-fourth of them were made. Rhyolite of various colors and veinings or bandings comes next in frequency of use, comprising one-sixth of all; and the remaining one-sixth includes sandstone, quartzite, felsite and occasional specimens of other kinds. According to Charles W. Brown, Professor of Geology in Brown University, some of these must have come from a considerable distance, as, for instance, from Attleborough, the Boston basin, Marblehead; but in some cases these may have been brought to the neighborhood in the glacial drift, instead of having been obtained in the regions of their natural occurrence.

Among the chipped objects there are fifteen which I take to be perforators or the bases of perforators with their points broken off; and seven of these are shown in the lowest row of Group B. About forty other chipped objects were found that did not seem to be projectiles or perforators, and may have been unfinished pieces, knives or scraping tools. The best worked of these are shown in Group E, first row, nos.1 and 5, second row at end, and in Group B, second row, no. 7. The latter was found six inches below the ancient surface. At least a dozen cores from which flakes had been detached for fashioning chipped objects are among the specimens collected.

The most striking feature of all other classes of artefacts from this site is the extremely crude character of almost all of them; although it must be remembered that the specimens thus far discovered may not be fully typical of the entire culture. With few exceptions they are natural unshaped pebbles showing marks of use, or are very roughly and imperfectly shaped. Only two specimens are grooved: one of them a sandstone "sinker," shown in Group C (second row, no. 3), carefully shaped and with shallow groove all around its longer axis; the other a blunt axe or hammer (C, second row, no. 4), double-edged, symmetrical except that one corner is broken off, very lightly grooved or roughened all around the middle. Five specimens are notched for hafting, sometimes fairly well (C, second row no. 2, third row no. 2), sometimes very crudely (C, first row, nos. 1, 3). Besides the sinker and well-notched adze, the few pieces which show particular care and skill in workmanship include the following: a gouge (C, first row, no. 2), found standing upright just below the ancient level, with edge smoothly ground and slightly broken, measuring 4 5/8 by 1 5/8 inches, and 7/8 inch greatest thickness; a blunt celt or pestle (D, first row, no. 2), 6¼ by 2½ inches, 1½ inch thick, of gabbro diorite, remarkably well shaped; a hand-hammer or pestle (same row, no. 1), 5 by 3 by 2½, carefully worked into shape; an axe or spade (E, first row, no. 4), 4½ by 3 by 1, tapering in thickness towards both ends; another piece, possibly hoe or spade (same row, no. 3), 5 by 4 by ½ tapering to a thin edge; and a small fragment of a very thin tablet (the smaller piece in E, second row, no. 3), of slate, carefully shaped to a uniform thickness of 4 or 5 millimeters, with delicately rounded edge and tool-marks on edge and body. Next to the last named object is another flat fragment worked on only one side, with a rounded edge. Not more than two or three other pieces besides those just described show a deliberate attempt to modify the natural shape, except sometimes to a very slight degree.

A great many stones, however, show marks of use due to striking or rubbing operations. Among them are a number that seem to be hand-hammers (D, first row, no. 3, second row, nos. 1, 3); some roughly edged tools (axe or adze, E, first row no. 2, second row no. 1); a fragment of a flattened pestle (D, second row, no. 2). Surfaces made smooth and flat by rubbing or grinding processes appear in a considerable number of stones including those shown in Groups C (second row no. 1, third row nos. 1, 3) and E (second row no. 2). Of objects that I have thought might be classed as hammers I have found 19 in all; of axes or adzes 6 or 7; and of what may have been hoes, spades, or possibly cutting tools for other purposes, 5. These latter much resemble the thin blades of which I have found many specimens among the corn-fields of the later Indians and which I take to be hoes; and they may, therefore, indicate that these earlier natives were

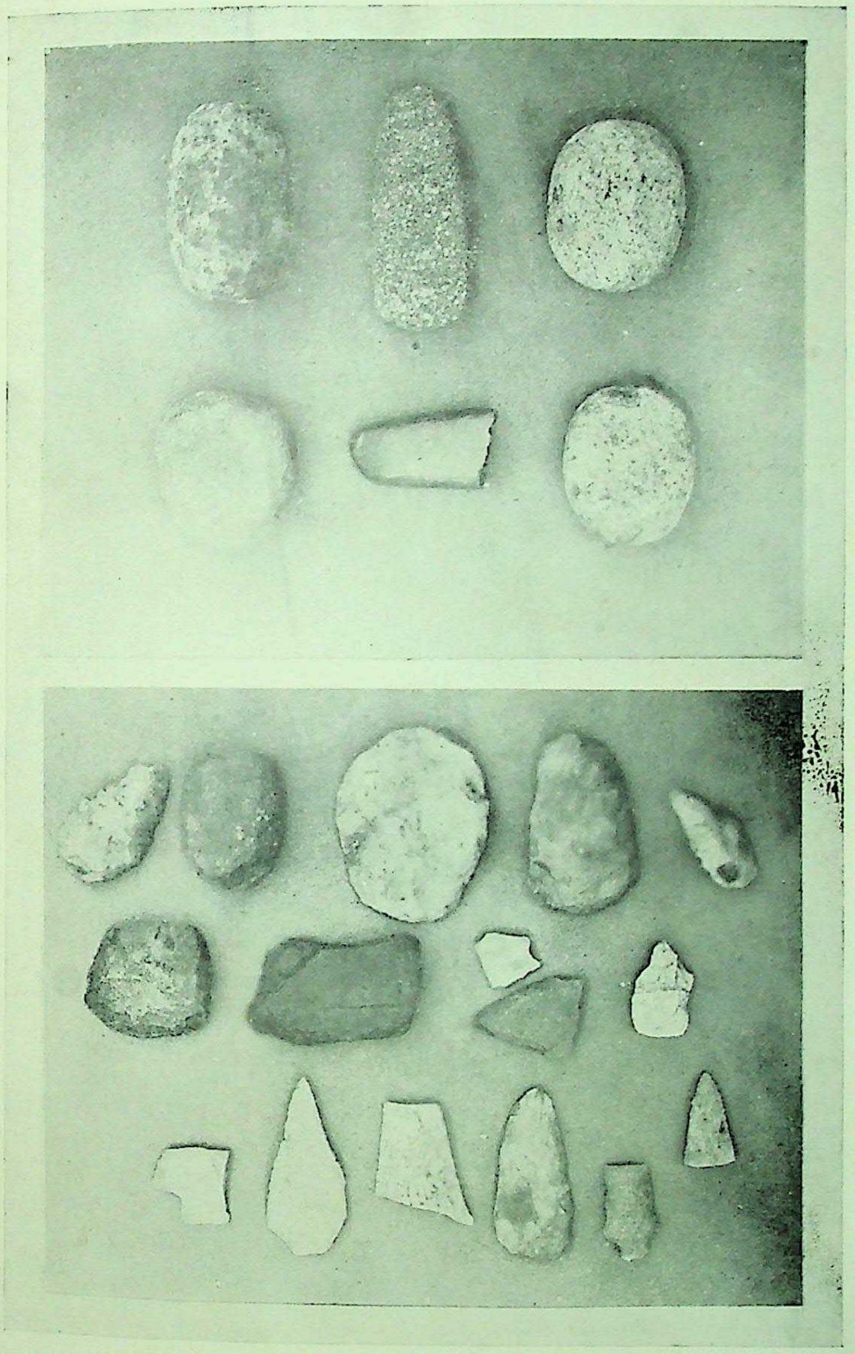


PLATE III
Artifacts from Grassy Island: Groups D and E.

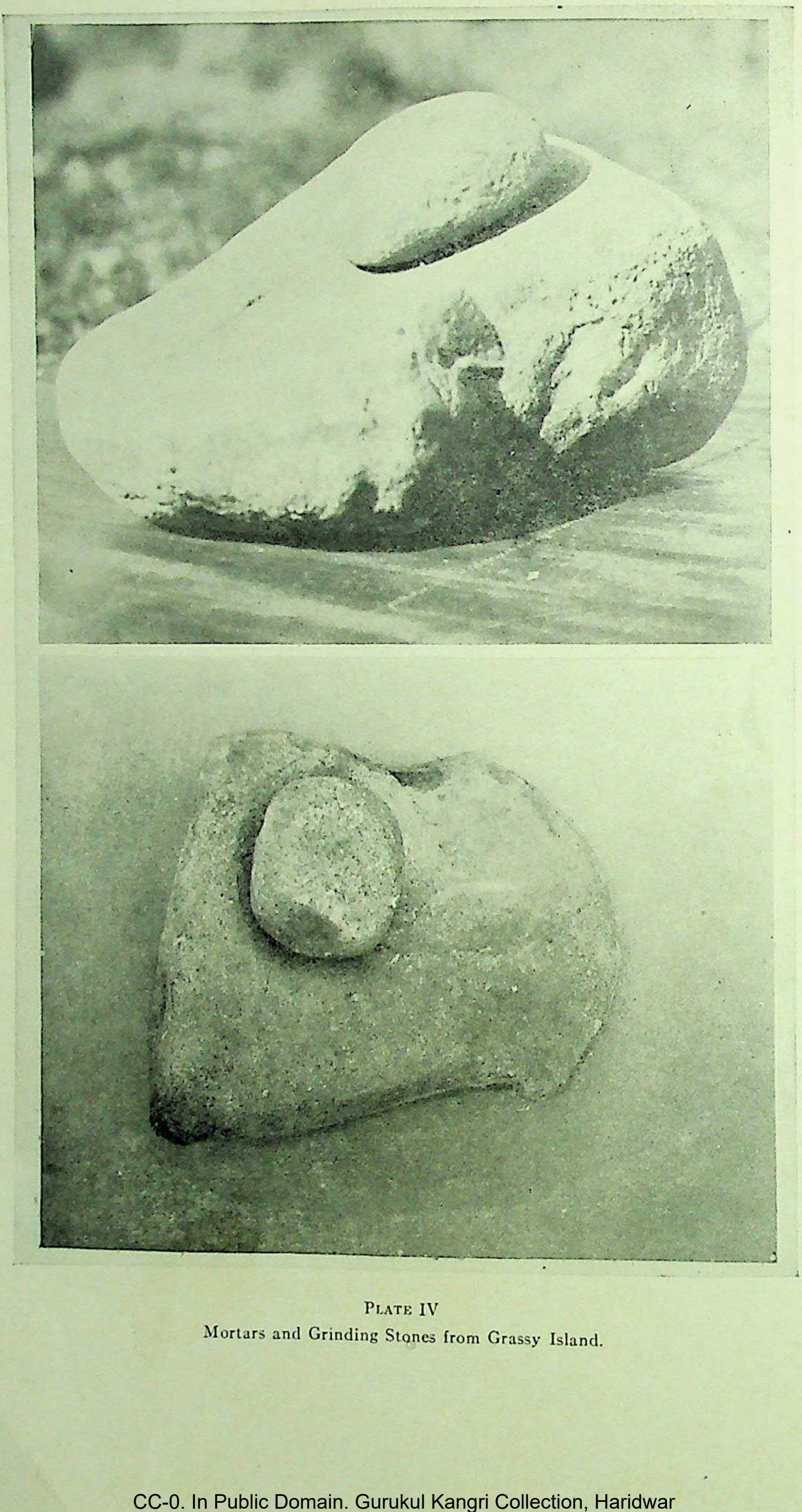


PLATE IV

Mortars and Grinding Stones from Grassy Island.

already acquainted with agriculture. One of them was discovered lying flat two inches below the ancient level.

Of especial interest are the mortar and grinding-stone or muller of Plate IV. The mortar or metate is of sandstone, about 9½ by 11 inches on its upper surface, 6 inches thick at its highest corner and 2 to 3 at its lower end. It constitutes a sloping, not a hollow, grinding surface, one part of which rises at an abrupt angle to a higher level than the other. The muller is of coarse gritty sandstone, 4 by 3½ by 1¾ inches. It was found a hundred feet away from the mortar, but the manner in which it is worn leaves practically no doubt that it was used with the latter. It will be noticed that it has one side worn at a particular angle. When it is turned over, the flat face turned uppermost in the illustration exactly fits the bed of the mortar, and the worn edge exactly fits the abrupt upward slope which divides the mortar into two portions lengthwise, showing that it must have been rubbed back and forth repeatedly in that position. A second mortar was found of about the same size, but with a very shallow hollow on its upper surface.

The object shown in Group C, row two, at right-hand end, is a lump of pure graphite weighing an ounce and a half. The nearest places at which this may have been gathered are Mansfield, Mass., and Cranston, Cumberland, and Tiverton, R. I. A few minute fragments of red ochre have also been detected at various scattered places during the excavations.

The gouge is stained on one edge with sulphate of iron, and Mr. Willoughby tells me that he believes that this is due to its having once lain close to a firestone of iron pyrites in a grave. No other signs of graves have been discovered on this site. Of one broken arrow-head, not illustrated here, Professor Brown remarks: "Heating has destroyed the possibility of recognition of the variety of stone. It seems to have been cracked and charred by fire." In one place, near which were found the graphite, some ochre particles, the gouge and mortars and numerous other objects, I uncovered what I thought may have been a pavement or hearth of stones laid compactly together, measuring about two by four feet. These indications of the use of fire give some slight support to the evidence offered by the considerable variety of objects and the domestic character of some of them, that this site was actually dwelt upon at a time when its level stood high enough to be beyond the reach of the tides. At one time I thought that certain deep holes in the soil filled with decayed organic material were evidence of ancient stake-holes, but I do not now believe them to have had any connection with human activities.

The chief value of these observations is that they give some clue to the length of time during which New England has been inhabited. It is not very definite, and sets only a minimum limit at best, but so far as I know it is the only indication yet reported. This surface now lies under six feet of water at highest tides, and must have been at least two or three feet above them if it ever was the site of an encampment. In such case there must have been a subsidence of the land of at least nine feet since it was occupied by human beings as a dwelling-place. It is well known that north of Maine the land has risen since it was relieved of the weight of glacial ice; and there are many who believe that there has been a compensatory subsidence to the southward. The rate at which it occurred is still uncertain, and there is difference of opinion as to whether it still continues. Charles A. Davis,[4] who studied the salt-marsh formations near Boston, estimates that the rate of downward movement is the same as that at which the peat growths are built up,[5] and remarks that this "has not yet been determined, but is probably slow, perhaps less than a foot in a century." One observation of my own is pertinent. In front of a house on Assonet River, that was built early in the nineteenth century, I cleaned out a 12 to 15 inch deposit of peat from the beach, and found underneath it numerous fragments of old-fashioned crockery and glass that must have been thrown there by the early occupants of the house while the beach was bare.[6] This would indicate a peat-growth of perhaps a foot per century, as nearly as can be estimated, which agrees fairly well with the suggestion made by Davis. This is probably, therefore, fairly near to the maximum rate at which subsidence in this vicinity can have taken place, but it does not determine whether it is still going on. Douglas W. Johnson,[7] reviewing evidence bearing upon the matter, comes to the conclusion that there has been no recent subsidence of the coast. The downward movement if it occurred at all ceased some time ago. In the vicinity of Assonet Neck this seems to be true, for the location and acreage of the neighboring salt-meadows was described nearly three hundred years ago, and so far as I can judge by careful estimates there seems to have been no change. Unfortunately none of these data are very exact, and thus we have as yet no sure knowledge as to when the movement of subsidence ceased, or at what rate it had been previously going on. One possibility, however, is that there has been no subsidence since 1600 at least, since the meadows do not seem to have changed since then, and that, if previous movement was at the average rate of about one foot in a century, the habitable character of the ancient level of Grassy Island on and beneath which these relics lie ceased some nine hundred years before that date.

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[4] Economic Geology, 1910, vol. 5, p. 623.

[5] These grasses can grow only within certain limits of depth of tidal waters. If a coast-line is sinking too rapidly, the water deepens too fast and peat will not form. Where the latter occurs, therefore, the rate of subsidence cannot have been greater than the rate at which peat can grow; and the argument of this paper, that a certain time at least must have elapsed since the surface was habitable, will hold. If the rate was slower, this time would be longer.

This estimate, it must be acknowledged, will not be accepted by all of the best authorities. John R. Freeman, for example, believes that bench marks and other data in the vicinity of Boston afford conclusive proof that subsidence is still in progress at the rate of about a foot per hundred years.[8] If this be a correct interpretation of the facts, then the minimum time of our calculations would be somewhat shortened. On the other hand, Johnson argues that all of the supposed proofs of land sinking within historic times are open to criticism and may be given alternative explanations, whereas the physiographic evidence can be explained only by postulating long-continued coastal stability. Professor Brown suggests to me that, if he is right, our site may have been a winter encampment on the surface of the frozen marshes, and that the stone artefacts left there gradually sank down through the peat to their present level. It seems far from likely that any people would have chosen to encamp, especially for as long a time as is indicated by the number and variety of our specimens, on a position so exposed to wintry blasts, when there are sheltered valleys close by, and from which they would have had to go some distance for their fuel and drinking-water, unless they used blubber and melted ice for these purposes. It seems impossible, moreover, that they could have occupied for long-continued dwelling a position that is only a small island whose surface is submerged sometimes under three or four feet of water when tides rise to their extreme height. However, even if this possibility represents the correct opinion, it must have taken a very long time for all of the stones to sink down through the peat, and we should still be justified in assuming an ancient date for the occasion of residence there. Another suggestion by Professor Brown, that there may have been slipping clays underneath our implement-bearing stratum, whose displacement submerged the original level of the latter and permitted a growth of peat above it, again avoids the hypothesis of a general coastal subsidence but seems to involve our original estimates of antiquity, based upon a probable rate of peat-growth whose formation was complete, as we know, as early as 1640.

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[6] The beach was bare at first, I assume, because the current naturally sweeps strongly against the shore at this place; but a wharf was built at one end of this beach, probably not far from the year 1800, and a division wall of large boulders at the other end, thus producing conditions favorable for the growth of the grass.

[7] Scientific American Suppl., No. 2168, July 21, 1917; and Geogr. Rev., 1917, iii. 135.

[8] Report of the Committee on Charles River Dam, 1903, pp. 529ff.

Leaving the geologists, as we must, to settle this question as to subsidence or stability themselves, we may conclude that the discoveries at Grassy Island, taken by themselves alone, are at least most easily accounted for on the assumption that there were Indian tribes living in New England at a time when the soil level underneath the peat of this island was at least nine feet higher than it is now, and that this cannot have been later, and may have been an indefinite time earlier, than about a thousand years ago. If Abner Morse's "hearths" were also due to human agency, the habitat of these people extended at least as far as Cape Cod. So far as can be judged by the specimens of their handiwork already gathered, there is no evidence of any particular relation of their culture to that of the Red Paint people. They seem to have been expert in the manufacture of chipped objects, took pains also sometimes, at least, in shaping gouges, sinkers, pestles, hoe-like implements, and possibly tablets, but contented themselves with the crudest kind of other tools. These latter were used for various cutting, pounding, rubbing and grinding purposes, and were naturally shaped stones with a minimum of retouching, and, when necessary for hafting, with roughly made notches or rare and exceedingly shallow grooves. We know nothing further about them except that they made use of fire and of both red and black paint, and probably engaged in agricultural operations.[9]

Brown University,
Providence, R. I.

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[9] Since this paper was written a few further objects have been found, including two broken pieces of long spear-heads, a small fragment of a second gouge, and a curved fragment that looks as if it might have been part of the bottom and side of a stone pot.

DEBTOR AND CHATTEL SLAVERY IN ABORIGINAL NORTH AMERICA

By WILLIAM CHRISTIE MACLEOD

THE facts as to debtor slavery and chattel slavery in aboriginal North America are of considerable interest to economic history, yet they have been somewhat slighted. A survey of the data will no doubt be of interest and value.

DEBTOR SLAVERY

Le Jeune, in 1639,[1] wrote of the gambling of the Algonkian met by him in the region of Quebec:

> I have seen a savage woman who, having lost all she had, staked herself—not her honor, but indeed her services—that is to say, she would have been a slave or servant of the winner if she had lost. They say that it sometimes happens that when men or women stake themselves, he who wins them keeps them one or two years and employs them in fishing, hunting or in minor household duties; then he gives them their liberty. The savages *may not exercise severity, nor harshly exact a service from their countrymen.*

Lescarbot,[2] concerning the gambling of the Micmac specifically, wrote that men sometimes staked their wives, but at the cost of their self-respect, for:

> True it is, as to women lost at play, that to hand them over is full hard, for often they make mock of the gambler, and point the finger of scorn at him.

Roger Williams, speaking of the gambling of the Narragansetts and their neighbors[3] affords an interesting additional note on New England gambling:

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[1] The Jesuit Relations, v. 16, p. 201. (The italics in this paper are my own.)

[2] M. C. Lescarbot: History of New France, (Biggar, H. P., ed.), 1907, v. 3, p. 197.

[3] R. Williams: A Key to the Language of America, Proceedings of the Rhode Island Historical Society, v. 1, 1827, p. 146. In this doggerel verse the author moralises (p. 147) to the effect that "Our English gamesters scorn to stake, Their clothes, as Indians do, Nor yet themselves; alas, yet both, Stake souls, and lose them too."

J. Carver, Travels, (1766), 3rd. ed., 1838, p. 228, observes of the gambling of the natives of the western Great Lakes region that they gamble away "sometimes even their liberty."

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> When they have staked and lost their money, clothes, house, corn, and themselves (*if single persons*), they will confess [to the evil of gambling], ready to make away with themselves, being weary of their lives.

Choctaw[4] practices were similar to those of New England:

> When they are very much excited they wager all they have, and when they have lost all, they wager their wives for a certain time, and after that wager themselves *for a limited time.*

Of the Carolina tribes Lawson wrote, describing their gambling at intertribal festivals and markets,[5] that:

> they game very much, and often strip one another of all they have in the world, and, what is more, I have known several of them to play themselves away so that they remained the winners' servants *till their relatives or themselves could pay the money to redeem them.*

So much we are able to gather concerning debtor slavery arising from gambling. Of the servitude of thieves Lawson writes[6] for the Carolinas, that the natives had:

> no fence to part one another's lots in their corn fields, but every man knows his own, and it scarce ever happens that they rob one another of so much as an ear of corn, which, if any is found to do, he is sentenced by the elders to work and plant for him that was robbed, till he is recompensed for all the damage he has suffered in his corn field . . . .

Concerning indebtedness incurred in ordinary commercial transactions Lawson notes certain peculiar practices. He states that if a man dies in debt his widow is not required to pay anything of the debts, unless she is willing. This is not surprising, inasmuch as the wife presumably did not have any share in her husband's property interests. But strangely enough this freedom from obligation lasts only so long as the widow does not remarry, for "whosoever takes her to wife pays all her husband's obligations, though ever so many"; and if a man merely "court her for a night's lodging and obtain it, the creditors will make him pay her husband's debts." Peculiarly, furthermore, if a man takes a widow thus laden with her husband's debts, she seems to have some of the attributes of a chattel, although also a wife. Her husband may,

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[4] J. R. Swanton (*ed.*): An Early Account of the Choctaw Indians, (?1715), Memoirs of the American Anthropological Association, v. 5, 1918, p. 68.

[5] J. Lawson: History of Carolina, 1714, p. 287. Lawson also notes that "They never differ at gaming, neither did I ever see a dispute about the legality thereof ever so much as arise among them."

[6] Lawson, p. 292. On page 329 he observes of thieves that "they are slaves until they repay the person."

> "if he will, take her for his money paid to her deceased husband's creditors, and sell her to another for his wife. I have seen several of these bargains driven in a day; for you may see men selling their wives as men do horses at a fair, a man being allowed not only to change as often as he pleases but likewise to have as many wives as he is able to maintain."[7]

For the coastal regions of Washington and Oregon—Puget Sound and the Columbia River, etc.—Gibbs writes:

> If one Indian has wronged another, and failed to make compensation, or if a debtor is insolvent, he may be taken as a slave. Their mode of procedure is characterized by their wonted deliberation. The plaintiff comes with a party to demand satisfaction, and holds out to the other the option of payment or servitude. If no satisfaction is given he must submit, unless he is strong enough to do battle. And this slavery is final degradation. The rule of once a slave always a slave extends so far that if the debtor should have given up some relative in his power, and subsequently redeems him, he becomes his slave in turn. If a man purchase his father or mother they become his slaves and are treated as such. . . . . Even if one purchase his [own] freedom he is yet looked upon as an inferior.[8]

Parker for the same region[9] noted that persons are made slaves when "taken in payment of debts, if they are orphans of the debtor"; and that persons "sell themselves in pledges." While for this region Swan wrote[10] concerning gambling that:

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[7] Lawson, p. 114. For New England, on commercial debts, we have only the note of Williams (*op. cit.*, p. 45) that "it is common for a brother to pay the debt of a brother deceased." P. Jones: History of the Ojibway, 1861, p. 109, notes concerning liability for payment of blood money, that this falls on the murderer and his relatives, and that the amounts are usually such that these persons may have to labor for years in order to pay up. Equivocally enough, he notes concerning the murderer himself, that "This is, in fact, a sort of servitude, for the murderer is not his own, having to exert himself until the injured parties are satisfied."

[8] G. Gibbs: Tribes of Western Washington and Northwestern Oregon, (Smithsonian Contributions, 1877), p. 188.

[9] S. Parker: Journal, 1846, p. 156.

[10] J. G Swan: The Northwest Coast, 1869, p. 156. H. J: Spinden: The Nez Percé Indians, (Memoirs of the American Museum of Natural History, v. 2), says of the Nez Percé of the adjacent plateau that "it is said that women could gamble away their freedom, but men were not allowed to do this."

There was apparently method in the madness of the Indian gambler. Father De Smet wrote for the "Flatheads" or the Indians of the plateau generally, in the

I have known them to sell themselves as slaves *for a term of years*, or till another chance enables them to pay up their debts.

A note by Kroeber on the area embracing northwestern California and southwestern Oregon makes clear the fact that in this region at least a debtor may be made a chattel slave; and makes clear our other references to debtor slaves redeeming themselves. Kroeber writes:

> Slavery occurred in northwestern California as a result of any unpaid debt. It did not matter whether an obligation were wilfully incurred or not, since the law of the region consistently ignored intent. I remember a case of a man who in firing brush had burnt up secreted property of another man, and being poor was unable to effect compensation except by going into slavery. He *was later given in part payment of a blood settlement.* This was after the whites came, but in order to free himself of any claim or vengeance from his master he arranged to free himself by turning over to the latter his wages received from working for a white man for a specified period.[11]

Under the category "debtor slavery" we have now offered instances of servitude resulting from the staking of the person of oneself, one's wife, or one's dependents, in gambling; the selling of oneself for a lump sum of money; the pledging of the person of oneself or of one's dependents as security for a debt incurred through the ordinary commercial transactions, or incurred as a consequence of theft or of injury, intentional or unintentional, to another's person or property. Debtor slavery arising from one source or another appears as widely distributed throughout both agricultural and non-agricultural, stone age,

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region of the upper Columbia, that in gambling: "After losing their goods, they would stake their own persons; at first playing for one hand, then for the other; and if the game continued unfavorable to them, they played successively for every one of their limbs, and lastly for their head, which, if they lost, *they, together with their wives and children, became slaves for life.*" (Journey, in v. 27, p. 171, of Thwaite's Western Travels.)

[11] See A. L. Kroeber: Handbook of the Indians of California, (Bulletin 78 of the Bureau of American Ethnology, 1925). The above is quoted from a letter to the writer by Dr. Kroeber. H. H. Bancroft: Native Races of the Pacific States, v. 1, p. 253, refers to men staking their wives, in gambling, in northwestern California. In northwestern California furthermore we have the practice of making illegitimate children,—that is, those born of parents whose marriage has not been sanctioned by the exchange of a bride-price and its equivalent dowry,—lifelong slaves of some male relative of the mother.

North America; no doubt further intensive research would make it appear more widely distributed than it is possible at present to indicate. Curiously enough, we may here note, that, while debtor slavery resulting from the pledging of the person obtains on Puget Sound and southward including northwestern California, there is no note of it for the peoples of the North Pacific Coast north of Puget Sound. Yet these northern tribes had the passion for gambling pertaining to all Indians, and were quite as mercenary as their southerly neighbors. Moreover, for the important Kwakiutl group we have abundant data on the pledging of things other than the person in commercial transactions. It may be that the better social integration of the northern coast tribes, and the development of the potlatch, with its public exhibition of the shame of the poor and the indebted, affording psychological compensation to the creditor, may have inhibited the development or diffusion of debtor servitude; on the other hand it is possible that debtor slavery obtained but has not been noted in our accounts of the life of the northern tribes.[12]

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[12] One Tsimshian tale would indicate that a man might stake his wife and children in gambling. See Boas, F.: Tsimshian Mythology (1910-1911, 35th Annual Report of the Bureau of American Ethnology). But Curtis writes for the Kwakiutl that when a debtor could not pay up he kept borrowing from the creditor to meet the interest on his debt interminably; of course, as the debt increased the debtor's shame increased, while the creditor is given, in the potlatch, credit for his outstanding credits and is able to use them by transferring them in the purchase of a copper through the operation of a primitive sort of clearing house. (See Curtis: The North American Indian, v. 10, 1910; W. C. MacLeod: A Primitive Clearing House; American Economic Review, Sept., 1925 (in press).) But these notes were made after the Europeans had abolished forced servitude in Canada; however, Dawson (The Queen Charlotte Islands, 1879 Report of Progress, Geological Survey of Canada, p. 129) describes Haida gambling without note of gambling away of the person, and elsewhere describes Haida chattel slavery. We may have in the following a reminiscence of debtor slavery among the Kwakiutl. Boas writes that the pawning of one's name is called *qaqaoxc*—"selling a slave." Curtis says that when a man wished to pawn the name of his daughter he says to the prospective lender, "I wish you to take hold of the foot of my daughter," or "I wish you to buy my daughter to be a slave." (See Curtis, *op. cit.*, p. 144; and Boas, F.: Secret Societies of the Kwakiutl, U.S. National Museum, Annual Report, 1895, p. 346.) Among the Tsimshian a person might be enslaved, or condemned to death by sorcery, for sacrilege during the winter ceremonials. (F. Boas: First General Report, British Association for the Advancement of Science, 1889, p. 832.)

CHATTEL SLAVERY

Hereditary chattel slavery was a conspicuous trait of the culture of the non-agricultural North Pacific coast where it has been noted for a continuous area from the Aleutian Islands to northwestern California, inclusive. An active intertribal slave trade was carried on. On the margins of this area—on the adjacent plateau, tundra, and desert, and in the mountain valleys of California—the institution becomes merely the non-hereditary enslavement of prisoners of war.[13] The proportion of slaves to the total population has been variously estimated at from one-twentieth to one-third, varying, apparently, with the conditions of life of the villages along the coast; the proportion decreased under the influence of European culture, and slavery disappeared altogether with Canadian and American prohibition.[14]

In agricultural America slavery was not hereditary. Slaves were merely captive men, women, and children who were either waiting adoption or were not adopted. Of the Choctaw[15] we read:

> When they capture any young people, girls, women, or young boys, alive, they carry them to their villages and make slaves of them. There are nations which adopt them as dogs; they make them perform all the functions of a dog, guard the doors, growl when anyone enters or goes out, eat the leavings of the dishes, and gnaw the bones.

Bartram noted the abjectness of the slaves of the Creek, neighbors of the Choctaw:

> In observing these slaves we behold at once in their countenance and manners the striking contrast betwixt a state of freedom and slavery. They are the tamest, the most abject creatures, that we can possibly imagine; mild,

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[13] H. J. Nieboer: Slavery As An Industrial System, The Hague, 1900, has some worth-while discussion of the slavery of this area. My observations are based on a particular study of the slavery of the North Pacific which I am presenting elsewhere, separately. At present it is difficult to exactly delimit the area of hereditary slavery.

[14] One-twentieth in John Work's census for the Kwakiutl. (See Curtis, *op. cit.*, v. 10, p. 303.) Gibbs, *op. cit.*, p. 188, says that it was about one-tenth on the Sound and the Columbia, but was larger north of the Sound. Simpson, G.: Narrative, 1841, p. 125, for the Tsimshian region particularly, estimated one-third as the proportion.

[15] Swanton: Early Account, (?1715), p. 63. Lawson, *op. cit.*, p. 327, notes that in the Carolinas the term for slave means "that which is obsequiously to depend on the master for subsistence," and is applied alike to pets, domestic animals, and slaves, generically.

> peaceable, and tractable; they seem to have no power or will to act but as directed by their masters; whilst the free Indians on the contrary, are bold, active, and clamorous. They differ as widely from each other as the bull from the ox.

In describing the *miko* or village civil chief of the Cuscowilla Lower Creek or Seminoles, Bartram describes the chief's retinue:

> He has been a great warrior, having then attending on him as slaves many Yamasee captives taken by him when young. . . . They were dressed better than he, served and waited on him with signs of the most abject fear.

Of the non-hereditary character of Creek slavery Bartram observes:

> The slaves, both male and female, are permitted to marry amongst them. Their children are free, and considered in every respect equal to themselves but the parents continue in a state of slavery as long as they live.[16]

The male slaves referred to no doubt included some boy captives matured. But, clearly, among the southern tribes as among the Iroquois far to the north, among whom agriculture was of somewhat less importance, male captives were sometimes enslaved rather than adopted or burnt, and used in field work. That these male adults might not run away, sometimes the Iroquois, as did the southern Indians, would mutilate the feet of these slaves, impeding their movement and making their footsteps identifiable.[17]

Descriptions of Iroquois life further illustrate, probably not only Iroquoian slavery, but that of the Eastern Woodlands in general.[18] Among the Iroquois, captives were sometimes burnt in sacrifice; sometimes adopted as members in full standing of Iroquois families. But frequently they were merely made slaves of the living, or slain with a view to sending them to the other world to be slaves of some deceased member of the family into whose possession they had come. Slavery was not hereditary. La Hontan notes:

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[16] W. Bartram: Travels, 1791, pp. 181, 185-186, 213.

[17] For a 1540 account of the crippling of slaves by cutting either the tendons of one foot or one heel see Garcilasso's La Florida, Dec. 1, lib. 3, cap. 17; Dec. 2, lib. 1, cap. 11, and lib. 2, cap. 7, lib. 3, cap. 4; in B. Shipp's translation; De Soto and the Conquest of Florida, 1891. This mutilating was apparently general in the southeast, and in time no doubt spread northward. Lawson (*op. cit.*, pp. 53, 93) notes that the Carolina Indians likewise, for the same purpose, "first raise the skin, then cut away half the feet, and so wrap the skin over the stumps and make a present cure of the wounds." He describes a Carolina Indian who had been a captive among the Senecas but had escaped; the Senecas "had cut his toes and half his feet away, which is a practice among them." Of the Chinook of the far away North Pacific Coast, Curtis (*op. cit.*, v. 8, p. 89) notes that "a slave much given to running away was cut on the bottom of his feet so as to make travelling difficult."

[18] The French travelers and missionaries very frequently use "slave" and "prisoner" synonymously *because a captive was in fact a slave* pending possible burning or adoption.

> Upon the death of a savage his slaves marry the other women slaves and live by themselves in a distinct hut, as being then free, or such as have no master to serve. The children who spring from these marriages are adopted or reputed the children of the nation by reason of their being born in the village or the country. "There is no reason," say they, "that such children should bear the misfortunes of their parents, or come into the world in slavery, since they contributed nothing towards their creation." These slaves take great care to go every day to the foot of their master's coffin, and there offer up some pipes and tobacco as a grateful acknowledgment of their liberty.[19]

Of mortuary killing of slaves, La Hontan notes that male prisoners[20] are, by the council of elders, "commonly presented to such married women or maids as have lost relatives in the expedition, and to those who want slaves."

> Now, if the woman to whom the present is made means that the poor wretch should die, she gives him to understand that her father, her brother, her husband, etc., having no slaves to serve them in the country of the dead, it behooves him to take a journey thither out of hand.[21]

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[19] La Hontan: New Voyages (1705), Thwaite's Edition, Chapter on Manners and Customs, in vol. 2. Compare The Jesuit Relations, v. 43, p. 293 (1656), where we read of slaves "who have become heads of families after the death of their masters, or have married. Although they lead a tolerably easy life they are looked upon as slaves, and *have no voice, either active or passive, in the public councils.*"

[20] Female prisoners "are distributed among the men, who are sure to grant them their lives." (La Hontan, v. 2, p. 505.) Cf. The Jesuit Relations, v. 43, pp. 293, 299, 303, where it is stated that until someone will care to marry them, women prisoners are slaves who are very harshly treated and liable to be killed on the slightest will of their owner, master or mistress.

[21] La Hontan, v. 2, p. 505. Supported also in this by The Jesuit Relations, v. 54, pp. 93-95 (1669), where we read of the Jesuit father who baptised a young woman "of the more influential class" of the Senecas, which woman shortly after died. Despite the protests of the priest the young woman's mother argued for a mortuary killing: "Thou dost not understand. She was a mistress here, *and had at her command more than twenty slaves who are still with me.* She never knew what it was to go to the forest to bring wood, or to the river to draw water. She knew nothing about house keeping." The mother insisted that the priest baptise a sick slave ("one of my slaves") and instruct it how to find the road to the Christian paradise whence the girl had gone, and to serve her there, because the girl would be alone of her family in the Christian paradise.

Slaves were used among the Iroquois not only in agricultural labor, but for gathering firewood—a laborious duty—and drawing water; and used not only in the villages, but as menials, and even as hunters with hunting parties.[22] Foot mutilation, where it was used, would tend to prevent running away from a hunting party; and another factor which tended to prevent running away arose from the fact that as soon as any warriors were taken prisoner:

> their relatives, and the whole nation to which they retain, look upon them as dead; unless it be that they were so much wounded when they were taken that they could not possibly kill themselves. These indeed they receive when they make their escape; but if the other prisoners should offer to return, they would be condemned by their relatives, and nobody would receive them.[23]

This non-hereditary enslavement of captives, with occasional mortuary immolation of slaves, existed westward of the Mississippi, and appears to be linked, in distribution, with the non-hereditary slavery of the western plateau.[24]

CONCLUDING NOTE

Debtor slavery in one form or another, and chattel slavery, have been shown to have a very wide distribution in aboriginal North America. Further investigations no doubt will show them to have been even more widely diffused—even universal, perhaps. At present, however, it would seem that such were definitely absent at least among the central and eastern Eskimo, and among the peoples of central California and the adjacent Southwest. Hereditary slavery was very clearly confined to the coast of the North Pacific; it would seem that the area of non-hereditary slavery surrounding this stretch of hereditary slavery is a part of the single, great area of North American non-hereditary slavery.

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[22] In Lawson, *op. cit.*, for the Carolinas, we have note of a slave being used as a carrier by his master while engaged in intertribal peddling (the case of the Waxaw on his way to the Congaree and Shawnee); and note of a slave doing the hunting for his master when on a journey (the case of the chief of the Eno). Strachey notes that the Virginia village chief, Eyanaco, kept seven members of the broken Roanoke Colony to beat copper for him, which recalls the use of Jewitt by Maquinna, the Nootka head chief, as armorer. (See MacLeod: The Origins of the State, Philadelphia, 1924.)

[23] La Hontan, v. 2, p. 506. Compare Dawson, *op. cit.*, p. 497, on the Haida: "Slaves sometimes regain their freedom by running away, but should they return to their native place, they are generally so much despised that their lives are rendered miserable." In the Jesuit Relations, v. 43, p. 293 (1656) we read that some Iroquois slaves are those who "have fallen into slavery after being the richest and the most esteemed in their own villages, and who receive no other reward from their masters in exchange for the ceaseless labor and sweat than food and shelter"; perhaps unredeemed by their own tribesmen because of cowardice in having been taken alive.

[24] See, for example, Jones: History of the Ojibway, 1861, p. 131; L. de Cessac: Renseignments ethnographiques sur les Comanches, (Revue d'ethnographique, v. 1), pp. 115-116; Bancroft, *op. cit.*, v. 1, pp. 436, 433, 500, 510; Schoolcraft: History of the Indian Tribes, 1851, v. 1, pp. 232. 235; v. 5, p. 210.

Our notes on distribution and type suggest the possibility that the hereditary slavery of the North Pacific Coast developed as a result of diffusion from Asia; in such case one might consider the non-hereditary slavery of the greater part of the remainder of North America as a weaker reflection of the same influence. The writer sees *no economic or political reason for the non-existence of hereditary slavery in the agricultural southeast of North America*, considering its existence among the northwestern hunters and fishers. Yet it may be indeed that the hereditary slavery of the Northwest grew up as a further development of the non-hereditary slavery which no doubt originally obtained there as in the rest of North America. We may conceive of the non-hereditary slavery as having arisen through the desire and opportunity of families who had lost bread-winners in war to recoup their labor force by using prisoners—and yet being unwilling to adopt them, at least without a probationary period—which period would tend to become indefinitely long. Psychological changes, involving a tendency to despise the children of those who have lived as slaves, coupled with the development of an active intertribal trade—this latter apparently being especially highly developed among the innumerable fjords and islands of the further North Pacific coast—might be considered as making for the non-adoption of slaves' children, with their ownership by the owners of their parents. The *psychological* development here involved would not necessarily follow on the development of marked social stratification among the freemen, alone, for this social stratification is equally marked in both the northwest and the southeast of North America.

We note, too, that debtor servitude and chattel slavery represent *two distinct lines of institutional evolution*, although both come eventually to be more or less closely woven together in the cultural complex.[25] Possibly one or the other type of involuntary servitude got a start first and set the example which gave cause to the initiation and development of the other. The known distribution in North America of the two types does not warrant any conclusion as to the priority of one or the other.

Finally, we may add that when the actual facts of aboriginal American land tenure are considered in connection with the actualities of aboriginal American slavery they disprove once and for all the widely accepted thesis which Nieboer vainly attempted to prove, that slavery can only evolve where there is an abundance of "free land"; for in aboriginal America, most certainly on the Northwest Coast, all land was held as property and there was no landed property that was not, the state of the arts considered, effectively utilised economically.[26]

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[25] Apparently only on the northwestern coasts of the United States might a debtor be made a chattel slave, whose condition would be hereditary.

[26] Compare my note entitled Superest Ager, in The Quarterly Journal of Economics, May, 1925.

BURIALS IN THE MAYA AREA

BY O. RICKETSON

TO DATE, the archaeological work carried out in the Maya area has been of a more or less sporadic nature. A good deal of exploration has been done and a great many sites have been reported; but exhaustive examination of any one important site is the hope of the future. If these statements are true for the whole field, they may be reiterated with emphasis for the burials.

In examining the literature on Maya burials the most prominent factor is the paucity of material; the second is the great unevenness of the work reported. In one case a writer states that he has entered and examined over one hundred chultuns, of which he found many that had been utilized as burial chambers or as ossuaries; yet in his report only thirty-four chultuns are described, the article concluding with the remark that to "enumerate or attempt to describe the subterranean chambers which furnished no data would only serve to fill up the report with useless matter." It is to be regretted that a brief summary, giving exact numbers, could not have been appended, for it would enable us to state definitely that a given per cent of chultuns were used as burial places in this case. On the other hand, the work of Dr. Gann leaves little to be desired, and he has probably opened more mounds than any other man alive today.

We cannot yet classify Maya burials according to position nor frequency of occurrence in any given area, but we can itemize the various kinds employed. A civilization as highly organized as the one we find in the Maya area must have developed a caste system, and determination of caste distinctions in burials would be a great stride towards a better understanding of the whole culture. At present we can cite almost any type of burial desired, from simple inhumation to burial in complicated vaults, not excluding cremation preceding urn-burial. Our earliest authority, who, unfortunately, writes all too briefly on the subject, does imply that the method of burial was a matter depending on the social position of the deceased.

This authority is Bishop Landa,[1] who writes of contemporaneous customs. On the psychological side, he tells us that the Maya entertained a great fear of death, and that the sole purpose of all their rites was to beg their gods to grant them health, life, and daily bread. The dead were mourned long and bitterly, and it was believed that the deceased had been carried off by an evil spirit. As to the actual burial itself, he states that the mouth of the of the dead person was filled with corn[2] and small stones, the latter to serve as money in the life hereafter. The grave was usually dug beneath the floor of the house, in which case the house was abandoned,[3] or in the yard outside. Pottery idols were placed in the grave, and if the deceased were a priest, his books. It may well be that the grave-objects were characteristic of the rank and occupation of their erstwhile owner; the hot, humid climate, however, has, so far as archaeological work reveals, destroyed every article except the most lasting.

Landa states, further, that people of high rank—this statement alone intimates another, *lower* class—were cremated and the ashes placed in urns. The 'princes' were cremated, but their ashes were preserved in hollow statues of baked clay. As opposed to these two classes, 'rich people' made statues of wood with hollowed heads for their parents. Part of the body was then burnt, the ashes were deposited in the hollowed head, and the latter sealed. The head of the deceased was skinned and stretched over the wood. Those parts of the body left after these operations were then buried,[4] while the statues were preserved with veneration among their idols.

A like custom existed among the Cocom princes,[5] differing only in detail. The deceased's head was cut off, boiled, and cleaned. It was then sawed in half laterally, the front (facial) half being covered with gum modelled to resemble closely the expression of the man during life. These masks were preserved along with the ash-statues in the 'chapels in their houses.'

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[1] Landa. 1864. Chap. XXXIII, p. 195.

[2] Called "koyem" according to Landa.

[3] Gann. 1918. p. 85.

[4] Guthe, 1922, p. 318, says of a burial: "No furniture, no trace of a skull, teeth, or of the atlas and axis could be found."

[5] Rulers of Mayapan until the middle of the 15th century.

It may not be strictly relevant to the title of this paper to insert the religious beliefs of the Maya as Landa records them; but they are given briefly enough and consisted of ideas not unlike our own—a belief in the immortality of the soul and of a life after death. Their Paradise they called Yaxche, "The Green Tree," and their Hell, Mitnal, where the damned suffered perpetual cold, hunger, fatigue, and sickness.

Landa mentions one specific grave, that at Itzamal,[6] in this brief statement: There was

> a large urn with three pedestals, painted with silvered colors outside and enclosing the ashes of a cremated body, along with some of the arm and leg bones, of a marvelous (great) size as well as three worked objects of blue stone.[7]

Landa fails to mention the character of the graves, that is, whether they were merely excavations for simple inhumations or more elaborate stone vaults. We find both types.

Palenque has excellent examples of vaults. Work was carried on at this site by Holmes,[8] in 1895, who introduces Thompson's report with these prefatory remarks:

> The evidence is sufficiently strong that the pyramids and buildings of Palenque were devoted in some measure to mortuary uses, and this too, by the origina builders. Such use would appear, however, to be secondary, if, as we are in the habit of assuming, the temples were the sanctuaries of deities. . . . Yet the discovery by Del Rio[9] of evidence of a burial beneath the sanctuary floor of the Temple of the Cross, of similar evidences by Waldeck[10] in a gallery in what he calls the Temple of the Palace, suggests the possibility that the whole structure . . . may have been erected to do honor to some ruler or religious official whose remains occupied a vault in the body of the pyramid. . . . It was customary, evidently, to build small tombs in the sides of the pyramids, as it was also in Yucatan on the north and Oaxaca on the west.

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[6] Landa., 1864 p. 32, 33.

[7] Gann, 1905. p. 106 describes calcined bones in vases.

[8] Holmes. 1897, p. 206.

[9] Del Rio (Gates reprod. in the Peabody Museum, Cambridge).

[10] Waldeck, 1886, p. iv.

The tombs themselves are described by Mr. Thompson, who accompanied the expedition.[11] These appear in connection with the Temple of the Cross, so near the surface that clearing away the vegetation was sufficient to expose either the wall- or the roof-slabs. They were aligned parallel to the façade of the temple, and Mr. Thompson is of the belief that a thorough exploration of the mound would reveal tiers of tombs on all four slopes. Only one tomb was examined. It consisted of a rectangular room roughly six feet by six feet and seven feet high, well-built of limestone material, probably once finished in smooth stucco. The roof was corbelled—the usual Maya arch—and in the center was a rectangular stone burial-case, formed of smooth-finished stone slabs, the cover-slab lying flush with the tops of the sides. On the cover-slab ~~were found~~ broken votive offerings. The grave contained two skeletons, one of which was lying on its side, with hands and knees drawn up towards its chin; the other was too rotted to determine even its position. The grave contained the usual objects (in this case a number of jadeite beads, a spindle-whorl, lance-heads, a bone bead, a good example of an obsidian knife blade, and pieces of well-shaped earthen cups) besides a small clay figurine that is of peculiar interest because of an ornate head-dress.[12]

At Monte Alban, Dr. Holmes discovered a chamber in the side of a pyramid which he figures and labels[13] as probably a tomb. Its roof consists of two rows of heavy stone slabs leaning together over the midline of the chamber. And the same author states, in reference to the "Building of the Basement Galleries" at Mital that,

> it seems . . . highly probable that the galleries were devoted to mortuary purposes.[14]

In 1923 Palenque was visited by Mr. Blom for the Direccion de Anthropologia of the Mexican Government, who reports that there must be many tombs at Palenque, as the whole area north of the Temple of the Inscriptions, as well as Group A, is a large cemetery.[15] He brought back with him descriptions or plans of eight sepulchres. These structures were all of the chamber type, the first being built like a small terrace, the sides walled, the floor of the terrace being the roof of the grave. This sepulchre contained an entrance leading by two right-angled turns to a room where a tomb of flat, worked stones formed a burial-case, much as described by Thompson above.

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[11] Holmes, 1897, p. 207. Maudsley, 1889-1902, vol. IV, p. 27.

[12] Figured in Holmes, 1897, plate XXIII.

[13] Holmes, 1897, p. 222.

[14] Holmes, 1897, p. 271.

Sepulchre 2 also contained an entrance corridor, giving into a small chamber with a Maya arch. Two burials occupied this room, one in a rock-lined grave; the other on top of the grave. The skeletons were badly rotted, but there were nineteen teeth, of which all the incisors were filed. In the grave itself there were twelve teeth, two bored for incrustation (in one the pyrite incrustation still remained).

Sepulchres 3 and 4 occurred together. They were in hewn lime-stone graves covered with dirt, the walls of small stones plastered with lime and clay. The easternmost grave contained a small niche in the west wall about opposite the knee of the skeleton, in which was found a clay olla; another olla painted with 'chacloom' was found to the south side: close to it a 'malacate.' There were pieces of bone and obsidian in the grave. Sepulchre 4 was of better construction than its companion. It contained teeth, of which two incisors were bored for inlays; it also had a niche in the western side-wall.

Sepulchres 5, 6, 7, and 8 offer no great variations from those already described. Number 5 had four burials in one room, the tombs themselves of limestone and plaster. The skeletal material had rotted completely, but the fact that one of the tombs was narrower at the south end than at the north would seem to indicate that the burial had been placed head to the north. Mr. Blom states that in all cases where the skeletal remains were sufficiently preserved for observations to be made, the burials lay head to the north.[16] This is exactly opposite to the ten burials inside the mound at Baking Pot, which we will take up later.

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[15] Unpublished notes in Mr. Blom's possession.

The only variation seen in sepulchre 8 is the fact that the bones lay, head to the north, on a low table of limestone blocks with a little raised edge.[17]

In contrast to these burials are those lying at the foot of the Temple of the Cross,[18] to the north of it. These vaults are noticeable as small hillocks. Entrance is effected by excavation which exposes steps leading down into the grave beneath.[19] Mr. Blom states that there are great quantities of these hillocks and that in all probability they cover identical vaults.

There are fewer examples of vaults more or less centrally located in a main pyramid[20] proper than of vaults lying on the outside slope or located without any relation to a main pyramid.

Maudsley[21] describes an opening in the floor of an inner room in the House of the Lion at Palenque. This opening gives entrance to a very steep stairway which descends to a lower chamber devoid of ornament.[22] At the southeast corner of this chamber is an entrance (which has at one time been blocked up) to another smaller chamber, now unroofed and open to the sky.

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[16] Maudsley, 1889-1902, vol. IV, p. 33, says: "To the S. and S. E. of the House of the Lion along the side of the stream and on hill slopes, there is a collection of low mounds containing a great number of small chambers. Two or three of these chambers contain stone tables and some appear to have passages leading out of them to inner rooms."

[17] Also reported by Guthe, 1921, p. 368.

[18] Maudsley, 1889-1902, vol. IV, p. 27, says: "Two-thirds of the distance up the slope (of the Temple of the Cross) were several sepulchral chambers which had been opened. In one there was a sort of stone coffin of well-cut slabs. The bottom and sides were covered with dark red powder."

[19] Maudsley, *idem.*, p. 32, says: "To the north of the Temple of the Sun is another small mound supporting a building . . . . This mound is joined by a terrace to the smaller mound which enclosed the sepulchral chambers shown in Plate XC. The entrance to these chambers was originally from the top of the mound by a flight of steps. . . . . This entrance has been purposely closed with a large stone slab.

[20] The writer distinguishes "mounds" from "pyramids" by position, size, shape, and probable primary purpose.

[21] Maudsley, 1899-1902, vol. IV, p. 33 and plate 90.

[22] Holmes, 1897, p. 188, describes this structure in the Temple of the Beau Relief, which is identical with the House of the Lion.

The other cases of complicated entrances to vaults in main pyramids given by Maudsley are at Menche, in House H,[23] and at Copan,[24] the so-called "Ventanas," of which he reports four. These latter are all long tunnels without stairs; at Menche the situation he briefly describes in twenty-six words:

> Leading down from the outer chamber are two passages with steps, communicating with an inner and lower chamber, which appeared to have been used for interments.

The vault of Copan, described by Galindo, if not used for burials, must have been an ossuary, for he describes the finding of more than fifty red earthen ware dishes and pots, "many of them full of human bones packed with lime," besides other minor objects.[25]

A famous tomb is that in the "Temple of the High Priest's Grave" at Chichen Itza. This was discovered by Mr. E. H. Thompson, but there has never been a published account of it, that we know of. It consists of a shaft forty feet long leading down from the floor of the temple through the center of an artificial pyramid to a natural crevice at the bottom. This shaft is easily ascended or descended, for the stone-work on either side of the shaft is specially cut so that portions jut out, thus affording excellent hand- and foot-holds. There can be no doubt that the pyramid was built over the crevice purposely. The crevice runs off at a sharp angle downward for a few feet and then expands into a natural chamber. The descent here, again about forty feet, requires the use of a ladder. Mr. Thompson discovered a burial at the bottom, and there was some grave furniture accompanying it.

One other vault burial of sufficient interest to be classed as unusual is reported by Dr. Gann.[26] It was in a pyramid situated close to the Rio Hondo, 80 feet high, 350 feet in circumference, and conical in shape. A passage 3 feet square was discovered 17 feet from the top, which led to a stone-faced chamber. Excavation in the floor of this chamber revealed six artificial strata totaling a depth of 12 feet 2 inches, at which depth were found forty skulls, all of people in the prime of life. Beneath the skulls were twelve flints of chert. Other articles found were: a polished red pottery vase (animal form); cruciform obsidian pieces, and a great many obsidian knives.

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[23] Maudsley, 1899-1902, vol. IV, p. 45.

[24] Maudsley, 1899-1902, vol. I, p. 31. Memoirs of Peabody Museum, vol. I, No. 1, p. 11. Stephens, 1841, vol. I, p. 133, p. 144.

[25] Galindo, 1836, p. 545.

[26] Gann, 1918, p. 86.

The skulls were all in the same plane, neatly disposed in rows. Not one could be preserved. With our knowledge of Maya burials at its present low ebb, how shall the burial of forty heads, all apparently in the prime of life, be explained? Dr. Gann makes two suggestions: secondary interment of skulls only, in which case the absence of the very young and the very old is difficult to understand—or the ceremonial burial of the skulls of sacrificial victims—though the Maya were supposed to have practiced human sacrifice but rarely.

It would have been interesting to know the sex of the skulls; if all are male, the interment of the forty skulls could be conjectured, perhaps, as a last honor paid to warriors killed in a single combat.

Before taking up the less spectacular burials, let us turn for a moment to the conclusions reached by Saville[27] on some burial mounds in the state of Oaxaca, for they have a relation to the burials already described and may throw light on some of the aspects of burials yet to be taken up.

The mounds excavated were burial mounds, though the author states that other mounds in close proximity might well be house sites, primarily. Their general characteristics are summarized under eight heads, as follows:

1. The graves consist of stone vaults, the doors facing west and sealed with large stones.
2. The funeral urns are placed in front of the tombs, on the roof, or fastened to the facade.
3. The vaults are true ossuaries; the absence of grave furniture is noticeable.
4. The bones are painted red. The tombs contain offerings of food and incense. Absence of decorated vessels in the vaults.
5. The presence of filed and inlaid teeth. (The inlay is hematite.)

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[27] Saville, 1899, vol. I, p. 350.

6. The burial of decapitated heads.
7. Elaboration of tombs with mural paintings and hieroglyphs.
8. Lack of use of mosaic for decoration as in the Mitla tombs.

The suggestive fact of this summary is that the majority of the above eight characteristics is applicable in some degree or another to reported burials in various more or less distant points of the Maya area. Stone vaults are reported from Palenque,[28] Copan,[29] Tulum,[30] Rio Holmul,[31] and Rio Mopan,[32] vaults used as ossuaries at Copan by Galindo and chultuns used as ossuaries by Thompson.[33] Cysts used for the same purpose rank after inhumation, which Gann[34] lists as the most common form of burial. The painting red of bones has not been reported elsewhere, though Maudsley reported a tomb smeared on the inside with red powder,[35] and a jaguar skeleton with teeth painted red was found at Copan beneath a mound which contained an earthen pot and traces of bone.[36] As for incense, Waldeck[37] states that on opening the subterranean chamber at Palenque he was led to believe that it was a sepulchral chamber because of a very strong resinous smell. The absence of decorated vessels is commented on by Gann in at least one specific case[38] and the presence of filed teeth is reported commonly.[39] So is the presence of decapitated heads.[40] As to the decoration of tombs, it is scarcely reported, unless we admit the chultuns of Labna, where seven out of thirty-four described by Thompson have either stucco or drawn decorations on the wall. Three of these seven decorated chultuns can be correlated with the eleven which he positively states contain human bones, and practically all of the 34 chultuns contain artifacts that suggest their ultimate, if not primary use as burial depositories.[41]

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[28] See previous notes.

[29] See previous notes.

[30] Lothrop, 1924, p. 102, p. 91, pp. 97-98.

[31] Merwin. Unpublished notes of an expedition sent out by the PeabodyMuseum of Harvard University.

[32] Gann, 1900, p. 692.

[33] Thompson, 1897b, p. 20.

[34] Gann, 1905, p. 105.

[35] Footnote 2, p. 9.

[36] Memoirs, Peabody Museum, vol. I, No. 1, p. 24.

[37] Waldeck, 1886, p. IV See also plate XLI.

[38] Gann, 1918, p. 73.

[39] Habel, 1880, p. 32, reports from San Salvador.

[40] Gann, 1918, p. 78. See also footnote 2, p. 3 above.

The two headings of the eight given above that are least applicable to the Maya area as a whole are number 2 and number 8. The latter need not surprise us, for Mitla stands alone in the great use of "mosaic" as ornamentation; but the placing of funerary urns *outside* the vault is a custom that, from all appearances, is not reported elsewhere.

Turning now to the southernmost extreme of the Old Empire we shall examine briefly the burials northward, to a burial found in Puerto Progresso.[42]

So far as could be ascertained only one grave is reported which contained a stone yoke.[43] This is at Apaneca, San Salvador, where two bodies lying in a grave formed by four porphyritic slabs were uncovered. Near the neck were more than two handfuls of pointed teeth and below these carved pieces of jadeite. The "yoke" was of gray, porphyritic stone, highly polished, and horseshoe-shaped. It was sixteen inches long and fourteen inches across the base, and appears to be of a different nature from the U-shaped yokes found to the North. Blackiston[44] reports many mortuary mounds in the valleys of the Chamelecon and Oloa rivers, in Honduras, usually rising seven to ten feet above the ground level. In most cases they were encircled by walls of medium-sized irregular blocks of stone brought from the river, these low walls having slight masses of earth in front of them. The bones were usually rotted badly. In the second mound excavated, a vaulting of cleverly fitted rocks was uncovered, and in it were found several ollas containing jade and clay beads, a large bizarre stone figure, a small face with a peculiar treatment of the beard and an aquiline nose, and a highly polished green mask. At another site near San Pedro Sula, a mound was excavated in which the outside retaining wall was extended so that it covered the whole surface of the mound. The other sites examined were practically all burial mounds along the river banks that were being rapidly eroded. The disconcerting fact here is that these eroding banks show no structural lines whatever, so that any guess hazarded as to their age is out of the question. Similarly the finding of a skull at a depth of twenty feet is equally disconcerting, for this may mean a great age, or a very rapid deposition of alluvium by a river constantly subject to floods.

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[41] The writer has heard the following explanations for the probable uses of chultuns:

a. Cisterns for the storage of water.
b. Storage places for corn, possibly inside a "bush" house which has long since disappeared. Dr. O. F. Dook of the Bureau of Plant Industry states that the collection of carbon monoxide in these depressions might insure against destruction by vermin.
c. Burial chambers; ossuaries.
d. A subterranean chamber where the maintenance of an even temperature would permit weaving of fine workmanship (Panama hats are today woven in cellars and are kept moist).
e. Ceremonial chambers.

[42] Boas, 1890, pp. 350-57.

[43] Habel, 1878, pp. 32-34.

[44] Blackiston, 1910.

Turning now to Copan, we find two classes of burials: Tombs or vaults of cut stone, and burials in a mound numbered 36.[45] The tombs may be vaults at the ends of long shafts, or they may be sepulchral chambers. These latter occur in the widest range of localities—two under a level court; one under the steps of mound 32, another under the steps of a ruined house, and five outside the ruins proper. Of these, two occurred in special mounds, while three were in perfectly level terrain, the roof-stones projecting but a few inches above ground. The walls usually have niches, and the vault is the usual Maya corbel. From Tomb 1 were taken two skeletons, four incisors with circular jade inlays, twelve earthen vessels, one of which is the magnificently modelled head of a wolf, now in the Peabody Museum; pottery whistles, shell ornaments, jade beads, bone needles, and the tops of two peccary skulls beautifully carved. This is a rich find, and rather overshadows finds in other tombs, if we are willing to suppose that a horse's tooth from Tomb 3 is an attempt to be amusing on the part of some post-Columbian rodent.

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[45] Mem. Peabody Museum, vol. I, no. 1.

The second class of burials, those excavated in 1892 by Mr. Owens in Mound 36, consisted of three dozen skeletons, found in a mound 130 feet long and 30 feet wide, 3½ feet high, and rising very regularly to the center. The surface was covered with large cobble-stones. Excavations revealed cement floors and walls, though these latter were not for supporting a roof. The floor foundations were pebbles. Scattered throughout the mound were potsherds, pots, pieces of bone, obsidian knives, etc. Ash beds with deer bones were noted. Some skeletons had the appearance of being buried, while others were apparently hurled in. Of the skeletons four had teeth either filed or incrusted, and one had teeth *both* filed and incrusted. Jade, not pyrite, was used for the inlay; two skeletons were buried on their back, one with the legs flexed over the abdomen; one was buried in a sitting posture, with the head bent over onto the pelvis; six were buried on one side, with either the hands under the face or the knees flexed under the chin, or both; and two were buried inside a circle of river stones. Burials 25 and 26 were so intermixed that it would seem to have been a secondary burial; and one burial had a rude shelter of four stones built over the skull.

Let us leave the ruins of Copan proper and note what Gordon says of the caverns near there.[46] It does not simplify our subject to do so, for besides a skeleton in a sitting posture, knees at chin, which crumbled into fine dust at a touch, he found, in Chamber 2 of the cave, that he was walking in soft, deep dust which crackled slightly, and upon investigation found that it was a veritable charnel-house of bones, all so badly decomposed as to be absolutely useless for study. Jars had been placed around the walls, but these contained nothing, apparently, but dust. Although the cave showed no signs of fire, he could only infer from the condition of the bones that it had formerly been used as a repository for the ashes of cremated bodies. Then he was lowered on a rope a hundred feet into another cave, and there the only reward consisted in the remains of a badly decomposed skeleton embedded in stalactite formation at the bottom. This may well have been the result of an accidental fall from the only opening, which was through a hole in the roof. Besides these extraordinarily unsatisfactory finds, Cave 3 yielded two jars containing charred fragments, which are probably the remains of an infant. The fact that the pottery found was of a type earlier than, though not inferior to, that of Copan does not clarify the situation.

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[46] Gordon, 1898.

In contrast to these caverns of the Old Empire, Mercer[47] reports that in the caves of the New Empire, his finds do not show any intentention on the part of the population to utilize them as places of continued burial, since in that more arid region the caves are sources of water supply and not a place to be polluted with corpses. At Xhambak,[48] however, he found skeletons whose bones showed no signs of burning, along with mortuary vases, and at the Cave of Actun Coyok,[49] a trench in the cave floor revealed a disturbed mass of potsherds, stones, charcoal, and ashes. The greatest depth of soil above the cave floor was seven inches. This occurred just above a fissure in the natural rock, and here were found pieces of human tibiæ, fibulæ, ulnæ, clavicles, metapodials and vertebrae, and two fragments of femur "split as if for marrow." But the lack of tools and implements lead him to believe that the caves were used merely as temporary places of refuge and possibly for the practice of cannibalism. If his latter belief is founded upon the one find of split femurs it rests on a very slender base. Out of the 29 caves visited, only 13 were of archaeological interest, and only 5 of the 29 contained human bones or fragments.[50]

Thompson's finds are also against the use of caves as burial places. In his first report [51] he states that in none of the cavities examined, of which there were more than a hundred in the Cave of Loltun, did he find the trace of any human remains. In his second report[52] an inscription on a rock led him to believe that it indicated a body swathed in mummy clothes, and that it is also a fact that the innumerable niches and cavities in the caves would be the most suitable place for the deposition of bodies. In ash and refuse filling a cavity of the floor in the Room of Inscriptions he found fragmentary portions of human bones and human teeth filed into curious forms.[53] But on the whole, the evidence is strongly against the use of caves in Yucatan as a usual burying-place. Had it been so, the dense population which must have existed when the Maya were at their height, would probably have rendered these caves archaeological treasure-houses.

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[47] Mercer, 1896.

[48] *Idem*, p. 34.

[49] *Idem*, p. 130.

[50] Mercer, 1896, p. 160.

[51] Thompson. 1897a.

[52] Thompson, 1897b.

Passing on to British Honduras, Price[54] describes a grave at Kendall, on the Sittee River. This consists of a three-sided chamber on the north slope of a mound 28 feet long and 20 feet wide. It is unusual in that slabs of slate are used for the side-walls, as well as for stelae elsewhere in the ruin. This chamber was three feet wide and eight feet long, about 4 feet deep on the inner side, but only 1 foot on the outer, owing to the slope of the mound. As usual, the skeletal material was beyond salvaging, but the grave objects consisted of half a bivalve shell, (jade) a mask, beads and 5 celts, all of jade,[55] small pottery alligator heads, and two circular discs of iron pyrites. A grave similar to this (except for the use of limestone instead of slate) has been reported at Acanceh, Yucatan.[56]

About twenty mounds have been examined by Dr. Gann in British Honduras and the adjacent territory. As a result of his work he lists the modes of burial in their order of frequency, as, first, inhumation, either recumbent or sitting; second, cyst-burials, especially secondary (i.e., as ossuaries); third, cremated remains in funerary vases.[57]

A good example of inhumation is Mound 1 near Corozal.[58] This is a circular mound 30 yards in diameter and from 5 to 6 feet high in the center. It is composed of three layers of rubble and two layers of cement. It contained twenty interments very irregularly placed, the burials being in a squatting position with the knees under the chin and the hands over the ankles or feet. Only six burials had objects—a flint arrow head; a flint hook; a pottery spindle whorl; two obsidian knives; a perforated object of mother-of-pearl; a leaf-shaped spear-head eleven inches long; a polished jade bead; a spherical hammer stone; a curved flint scraper (?); a pear-shaped flint, and a casket containing over one hundred teeth.

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[53] *Idem*, p. 19.

[54] Price, 1889.

[55] Illustrated in Gann, 1918, plate LXIX.

[56] Breton, 1908.

[57] Gann, 1905, p. 105. Compare Thompson, 1904, p. 7.

[58] Gann, 1914-1916.

In this same group a similar circular mound (Mound 4) contained a cyst floored and was roofed with irregular slabs of stone. The presence of bones in circular bowl-shaped vases was all the indication that the mound was a burial mound.

Near Progresso on Lowry's Bight, the same author reports a vase containing a small earthenware bead, a small obsidian knife, and the terminal phalanx of a small finger, and states that

> we learn from contemporary sources that on the death of a beloved child the mother cut off the tip of her finger and buried it.[59]

Near Succotz Merwin reports a circular burial mound ten and a half feet high and sixty-eight feet in diameter; it contained within it rectangular retaining walls. It was built up of successive strata, each stratum following the curve of the mound's surface, much as would the layers in an onion cut in half, the flat part of the onion representing the bottom of the mound. In it was found a burial.[60]

A similar mound was excavated by the writer at Baking Pot, in British Honduras, during 1924. This site was chosen for excavation as being the probable location of ancient Tipu, described by Fuensalida and Orbita[61] and others. No other ruin in the region fulfils all the conditions required; not only this, but the map given in Avendano[62] places Tipu on a *rio grande* (which we may suppose to represent the Belize River) and not on another

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[59] Gann, 1914-1916, p. 38.

[60] Merwin, 1909-10.

[61] Means, 1917, Chap. v.

[62] Map. Avendano and Loyola, Gates reprod.

rio grande indicated as lying to the north (probably the Rio Hondo). Means shows Tipu on this latter stream, but he never visited the region and could not know that the Rio Hondo, as its name signifies, is a slow and sluggish stream, while the description by Fuensalida and Orbita distinctly states[63] that they ascended a very turbulent stream with great difficulty—and the Belize River is just such a stream.

The excavation at this site was concentrated on Mound G, which stood in a prominent position on the north side of Plaza III, the highest plaza in Group I. The mound was 5 meters high and 25 meters in diameter. Excavation revealed that retaining walls just below the surface of the mound enclosed a dome-shaped rubble construction in which plaster floors, three in number, followed the curve of the surface of the mound. The retaining walls, themselves curved, averaged less than a meter at the corners (they were rectangular) but at the mid-sides rose to an average of 2 meters. Obviously the construction of this mound was primarily for burials; it is not conceivable that had it originally been planned for a substructure that the three plaster layers forming the floors would have been curved.

In the center of the mound, at a depth of 2 meters, a sepulchre was found with the remnants of a skeleton lying face down, head to the south. This vault was made of hewn limestone 2.6 meters long and 1.3 meters wide, and covered with large flat unhewn blocks of stone. Although the skeleton was badly rotted, shafts of long bones still remained, and the nubbly appearance of the shaft of the left femur closely resembled the lesions of a very virulent disease, like syphilis.[64] The incisor teeth were bored and inlaid with iron pyrite. The grave furniture consisted of two pots, both of black ware, and three-legged. That at the head was incised with a mat design, the one at the feet was plain. Besides these objects the grave contained several jade beads, two small jade ear plugs, a dozen or so diminutive pieces of polished jade (about the size of peas) equally small pieces of pyrites, and four small pieces of worked bone.

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[63] Means, 1917, p. 63.

[64] Compare Gann, 1918, p. 62.

Excavation around this vault on all sides, (except the west) revealed nine other skeletons, all lying head to the south, face down, and parallel to the main grave. All were simple inhumation. The entire space excavated to uncover these skeletons, including the vault, was only 4.9 by 5.9 meters. Skeletons 4 and 5 were to the south of the vault, the one directly superimposed upon the other so closely that we must suppose simultaneous burial; neither heads nor teeth of either could be found. Skeletons 7 and 8 lay north of the vault, side by side, but no. 7 grave pierced the second plaster floor, while no. 8 lay just on top of it. On the east of the vault were 5 skeletons. No. 9 lay alone, but nos. 11 and 13, and nos. 12 and 14, respectively, were superimposed, and again we must suppose simultaneous burial for each pair. It may be interesting to note that no. 12 was a woman, with filed teeth; no. 14 was buried directly beneath her pelvis and was a child who still retained its deciduous teeth. Of the others the following points may be noted: no. 8, a female, had filed teeth; no. 7 lay beneath a pile of rock, which covered the right leg and innominate; upon removing the stones, the leg was discovered to have been destroyed, probably by a secondary interment.[65] The other femur, in situ, showed excessive growth of the great tuberosity, and the humerus on the same side was shortened, twisted and with unusually enlarged condylar processes at the inferior end. Burial 7, as already stated, pierced the second plaster floor; the sepulchre (No. 15) lay beneath the third floor; all the others occurred between the first and second. The relatively good condition of all these bones must be attributed to the excellent drainage yielded by these curving floors as well as to the run-off afforded in the fairly steep slope of the mound.

Four other skeletons were uncovered; one lying face down, head to east, a few inches below the surface on the south slope of the mound, and three close together just outside the retaining wall, also on the south side of the mound. Of these one, buried on the back, lacked both pelvis and legs; the next, directly superimposed above the third, also on the back, lacked the left leg though the head of the femur and part of the neck was still in the acetabulum; his right leg was flexed at the hip so that his foot lay close to and above his head. Both of these skeletons were of unusually large size and showed great development of the ridges for muscular attachments. Their skulls showed no deformation. The third skeleton lay on its side directly beneath no. 2, hands drawn up in front of the face and the legs flexed under the chin. This was a typical Maya skeleton, with small light bones and very marked fronto-occipital deformation.

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[65] There was no time to explore the rock pile.

It may be noted in passing that of these fourteen burials only two contained any grave furniture beyond shards. These were the chief in the sepulchre, already described, and no. 13, who had near the head a piece of worked shell, two small cylindrical rolls of bone and pieces of a deformed deer antler. From the trenches around the mound itself great quantities of shards were taken, many of which could be pieced together, and one terra-cotta human figurine about four inches high, of red clay. Spherical hammerstones, showing abrasions at both poles, were fairly common; a half dozen flint knives, spear-heads and picks were unearthed. Near the center of the mound was found the calvarium of a skull, neatly cut to use as a cup or vessel; the bottom of it was much worn, either purposely in order to make it sit on a flat surface or from long use. Besides it was another piece of skull and a splendid example of an obsidian drill, evidently the implement employed to drill the hole that was to be seen in the piece of skull.

Summarizing the work in the Maya area, it would seem that to date the work has been of an exploratory nature, and that the archaeologists who have worked in this little-known field have had neither the time nor the patience to investigate the anthropological side, and in all probability go into the field without suitable preservatives for the very rotted bones.

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THE HOKAN AFFINITY OF SUBTIABA IN NICARAGUA

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INTRODUCTORY

IT IS the purpose of this paper to follow up a valuable hypothesis which Dr. W. Lehmann has recently proposed in regard to Subtiaba, a language now spoken by only a small number of Indians in a village near Léon, on the Pacific slope of Nicaragua.[1] This language is known to us also under the names of Maribio and, mistakenly, of "Orotina" and "Nagrando." Our material is due mainly to what Dr. Lehmann could obtain in 1908 and 1909 from an aged woman in the village of Subtiaba (Jiquilapa), but is supplemented to some extent by earlier vocabularies collected by Squier, Don Francisco Arragon (published by the Comte de Charencey), and Berendt (published in Brinton's *American Race*). For a long time the language was believed to be an isolated one, aside from a small enclave (Guatajiguala) further north in the Lenca country in Salvador. But it appeared later that it is very closely related to Tlappanec or Yopi, a language spoken in the state of Guerrero in southern Mexico, on the western border of the Mixtec area. Though what we know of this second language is apparently limited to a vocabulary of 69 words published by N. Léon in 1912, it is quite enough to show at once that Subtiaba and Tlappanec are really only dialects of a single language, differing no more, say, than Cree and Fox or than Ute and Southern Paiute. It is probable that they are mutually intelligible or nearly so. This is surprising in view of the tremendous distance which separates them, though there is plenty of precedent for this kind of distribution in America (cf. Pipil-Nicarao and Nahuatl; Mangue-Chorotega, Chiapanec, and Mazatec).

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[1] See W. Lehmann, *Zentral-Amerika, I. Teil: Die Sprachen Zentral-Amerikas, II. Band* (Berlin, 1920); see pp. 910-978, which are devoted to Subtiaba and Tlappanec. The close relationship of these two languages was first demonstrated by Lehmann in 1915 (see *Zeitschrift für Ethnologie*, 1915, pp. 1-34).

This Mexican and Central American language is of very special interest to students of the languages and cultures of the United States because of the great likelihood that Dr. Lehmann is correct in his surmise that it is related to certain languages of California. He seems to believe in a special relationship with Washo, of eastern California and western Nevada,[2] but I believe that this specific formulation of the theory is not quite acceptable. Since Dr. Lehmann first observed the remarkable analogy between the nominal *d*-prefix of Subtiaba and that of Washo, Dixon and Kroeber, J. P. Harrington, and the writer have been led, independently of each other, to affiliate Washo with the Hokan group (then consisting of Karok, Chimariko, Shasta-Achomawi, Yana, Pomo, Esselen, Yuman, Chumash, Salinan, Seri, and Chontal or Tequistlateco). The present writer was further led to connect with these Hokan languages a group of languages (Coahuilteco, including Comecrudo and Cotoname; Tonkawa; Karankawa; and perhaps Atakapa) spoken in northeastern Mexico and southern Texas, along the Gulf of Mexico, and introduced the term "Hokan-Coahuiltecan" for this enlarged group. An examination of Dr. Lehmann's material has convinced me that he is essentially correct, but that Subtiaba and Tlappanec are to be regarded as a southern outlier of the Hokan-Coahuiltecan stock as a whole, not of a subdivision of this group to which Washo belongs in particular. Aside from the *d-* (or *t-*) prefix, which is shared by Salinan and Chumash (San Luis Obispo dialect), and of which reflexes probably exist elsewhere in Hokan-Coahuiltecan, there seem to be no lexical or morphological agreements that would justify our setting off Washo and Subtiaba-Tlappanec against the other Hokan and Coahuiltecan languages. Of the seven lexical parallels that Dr. Lehmann gives between Washo and Subtiaba, four are probably correct;[3] they are noted below. Each of them has other Hokan cognates as well.

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[2] See pp. 973-975 of *Zentral-Amerika*.

In preparing the following list of cognate words and elements in Subtiaba (and Tlappanec) and Hokan-Coahuiltecan I have not by any means made use of all the dialectic Hokan and Coahuiltecan material which is available for comparison, scanty as that really is, but have limited myself in the main to the material which has already been presented in comparative form in other papers.[4]

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[3] These are words for "mouth," "nape," "sun" ("day"), and "frog." His comparison of the words for "tree," "silver," and "elbow" can hardly be correct and are partly due to misunderstandings. Washo *bēcu* "silver," which he compares with Subtiaba *baxka,* is to be read with *c*=English *sh* and is obviously borrowed from Spanish *peso.* Washo *d-utsu* "elbow" cannot be compared with Subtiaba *īsu,* which Dr. Lehmann inadvertently translates as "elbow." His material shows that this word really means "bone"; "elbow" is *īsu-paxpū,* literally "bone of arm." For Hokan cognates to Subtiaba *īsu,* see no. 4 of our list.

[4] See E. Sapir, *The Position of Yana in the Hokan Stock* (University of California Publications in American Archaeology and Ethnology, vol. 13, pp. 1-34, 1917), cited as *Yan.*; R. B. Dixon's and A. L. Kroeber's list of Hokan elements which have cognates in Washo and my own similar list in their *Linguistic Families of California* (*ibid.,* vol. 16, pp. 104-112, 1919), cited as *Was.-Hok.*; E. Sapir, *The Hokan and Coahuiltecan Languages* (International Journal of American Linguistics, vol. I, pp. 280-290, 1920), cited as *Hok.-Coa.*); E. Sapir, *A Supplementary Note on Salinan and Washo* (*ibid.,* vol. 2, pp. 68-72, 1922), cited as *Sup.*

It is highly probable that a detailed comparison with such Hokan-Coahuiltecan languages as Seri, Yuman, Chumash, and Tonkawa would disclose a great many additional Hokan cognates in Subtiaba. The orthography has been slightly simplified and normalized, so far as possible, to current Americanist usage in this country. Stress accents have been omitted. A number of phonetic and morphological observations on Subtiaba follow the list of suggested cognates.

I. HOKAN ELEMENTS IN SUBTIABA[5]

A. Body-Part Nouns

1. arm: *pax̣pu·*, Sq. *paʽpu*, Ar. *pahpa* (probably "thy arm"; *-u·*, *-yu·* is "my," *-a*, *-ya* "thy" in Sub.). Cf. Chim. *-pu* in *h-itan-pu* "arm" (*itan-* is "hand"); Chum. *pu* "arm, hand"; Sal. *puku* "arm."
2. back: *su·-gi·tcu·* "back," *gi·tcu·* (e. g. *gi·tcu·-naxku·* "back of foot"; *gi·tcu·* is compounded of local *gi·-*, see no. 113, and stem *-tcu·* or *-i·tcu·*, hence literally "at rear"), *gi·tca* "behind, back of." Cf. Sal. *ṭ-itcom'* "back," *ṭ-itcomo* "behind"; Com. *semi* "after."
3. blood: *ϵϵdi*, *ϵ'di*, Sq. *e·ti*, Ar. *edi*. Cf. Sh. *axta*, Ach. *axdi*; Kar. *ax*; Yan. *wat'du-wi* "blood," *-wat'-* "red"; S. Po. *hata* "red"; Moh. *ahwata* "blood," Dieg. *axwat* "blood"; Yum. *xwat* "red"; Se. *avat* "blood"; Chon. *awas*; Sal. *p-akata*, *ekata*; Chum. *ax̣uli-s*. Hokan **ax̣wati* ?
4. bone: *i·su·*. Cf. Moh. *isaka*, Dieg. *hak*, Wal. *tyaga*; Sal. *axa·kʽ*, (*p-*)*axak* "bone," *k-exakop* "bony"; Chum. *se'*; Se. *itak*; Es. *iya*; Po.[6] *ihya*, *iya*, *iha*, *hiya*, *ya*; Sh. *ak*; Yan. *iʽdal-la*. Hokan **ihyaka?*

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[5] Subtiaba forms not otherwise indicated are from Lehmann's material; Squier's Arragon's, and Berendt's forms are respectively marked Sq., Ar., and Br. The following abbreviations are used:

Ach., Achomawi
At., Atakapa
Ats., Atsugewi
Chim., Chimariko
Chon., Chontal
Chum., Chumash
Coa., Coahuilteco
Com., Comecrudo
Cot., Cotoname
Dieg., Diegueño
Es., Esselen
Kar., Karok
Karan., Karankawa
Moh., Mohave
Po., Pomo
Sal., Salinan
Se., Seri
Sh., Shasta
Sub., Subtiaba
Tlap., Tlappanec
Ton., Tonkawa
Wal., Walapai
Was., Washo
Yan., Yana
Yum., Yuma

[6] I quote different Pomo and Chumash dialects without specifying them in each case.

5. breast: *sosto, socto,* perhaps also compounded as *so·-* in *so·-gi·a* "breast-chain" (qualified elements nearly always precede in Sub., however), Ar. *sosta.* Cf. Wash. *cu·* "breast"; Chum. *usu·i* "chest, heart"; Chim. *h-usi* "breast"; Sal. *icu'*, *ico'* "breast." Further, perhaps, Chim. *cira, ci'ila* "woman's breast, milk"; Po. *sido, cido, ci'do* "female breast, milk."

6. breast (of female): *tci·tci.* If not borrowed, as Lehmann plausibly suggests, from Nahuatl *chichi* "to suckle," cf. Yan. *tc‘ik!i* "female breast"; Sh. *itsik* "milk," Ats. *atciska*, Ach. *i‘tcit* "milk, female breast"; Dieg. *itcix* "breast, heart"; Ton. *yatcax* "breast"; At. *itsk.*

6a. breast (of female): *d-u·du·-lu·* (or perhaps better analyzed as reduplicated *du·du·-*), compounded as *-du·-* in *ca·-du·-lu·* "suckling," *tca-du·*, *tca·a-du·* "suckling." Cf. Po. *ṭo* "female breasts, milk," also compounded as *-do* in *si-do, ci-do, ci'-do, s-do*, S. E. Po. *ko-do-n*(or *k-odo-n*) "female breasts, milk"; Chum. *k-utet* "woman's breast."

7. ear: *n*^{y}*ąų*, Sq. *nau*, Ar. *n*^{y}*qwa* ("thy ear"), Br. *nyahu.* Cf. Chon. *icma-ts*; Se. *islo*; Moh. *‘amalya*, Dieg. *‘əmał*; Po. *cima*; Chim. *h-isam*; Sh. *isak*, Ats. *asmak*, Ach. *issat*; Kar. *itiv*; Yan. *mal'gu*, Yahi *man'gu*; Sal. denominative verb *p-esno-*, *p-esna-* "to hear, listen"; Was. denominative verb *d-amal* (from **d-asmal*?) "to give ear, to hear." Hokan **isàma*, **isma*(*l*)*k-* ? For Sub. *n*^{y}*-* from *im-*, see Phonology.

8. excrement: *amba* (from **apa*, see Phonology). Cf. Chim. *h-ipxa* "intestines"; Sh. *ipxai* "intestines"; Yan. *p‘a-ts!i* "excrement"; Po. *i'pa, apa, fa* "excrement, intestines"; Sal. *p‘xat* "excrement, intestines."

9. eye: *si·tu·*, *si·ta*, Sq. *situ*, Ar. *sita*, Br. *siktu.* These forms are probably to be understood as *ṣi‘tu*, which is confirmed by *suxtu·* "eyelid"; cf. also Ar. *tasu-suxta* "eyebrows" (*tasu-* "hair," see no. 12). These two forms suggest compounding: **si-i‘tu* (or **sa-i‘tu*) "eye" and **su-*(*i*)*‘tu*, originally "hair of eyes, eyelashes" (cf. no. 12)? This **-i‘tu*, without preceding sibilant element, is in all likelihood actually found in *yi·tu* "tear," contracted from **ya-i‘tu* "water of eye"; for compounded **ya-*: absolute *i·ya* "water," see morphology. Cf. Se. *ito* "eye"; Moh. *-i·δo·*, Dieg. *iyu·*; Sal. *ṭ-uwu, ṭ-u·* "face," *u-ca-t* "eye-water, tears"; Po. *ui* "eye," *yu-xa* "eye-water, tear"; Chim. *h-uso-t* "eye," *h-isu-ma* "face," *h-uso-'xa* "eye-water, tears"; Sh. *oi* "eye," Ats. *oiyi*; Kar. *yu-p*; Yan. *tc'u-na* "eye, face." Hokan **isyu*?

10. face: *i·nu·*, *i·na* ("my, thy face"), *d-i·nu·-lu·* (for *d-* and *-lu·*, see nos. 120, 122), Sq. *inu*, Ar. *ina, inna* "thy face"; stem *i·nu-* shown in *i·nu-mba* "mask" (lit., "face-great"). Cf. Chim. *-ma* in *h-isu-ma* "face" (compounded with *-isu-* "eye," see no. 9); Po. *huma* "face" and, compounded

with *ui-* "eye," *ui-mo*, *hui-'mo*, *huu-mo*; perhaps also in E. Po. *mu-su* "hair" (lit., "face-hair" ? cf. no. 12).

11. fat: *d-asu·*. Cf. Yan. *hau-yau*, *xau-yau* (*-yau-* is nominalizing). Hokan **axau-* ?
12. hair: *t-asu·* (absolute form), Sq. *tu'su*, Ar. *tasu*; compounded as *su·-* in *su·hu* "hair of head," perhaps also as *su-* in *su-xtu·* "eyelid" (properly "eyelashes?" see no. 9). Cf. Chum. *o·c* "fur"; Was. *d-ayuc* "hair"; perhaps also E. Po.*-su* of *mu-su* "hair" (really "face-hair"? cf. no. 10).
13. hand: *n^y^au·*, Ar. *naow-a·* ("thy hand"), Br. *nyau*; Sub. *n^y^*, as Lehmann points out, seems to result generally from *i*+*n* (or *m*, see Phonology), e.g. plur. *-inu·* or *-n^y^u·*. Cf. Se. *inoł*. It seems better, in view of this comparison, to disconnect Se. *inoł* from Hokan reflexes of **iḷali* "hand, arm" (see *Yan.*, no. 23; *Hok.-Coa.*, no. 18; *Sup.*, no. 18, p. 68).
14. head: *ϵtcu·*, *ϵtca* ("my, thy head"), Ar. *etcoe*; Tlap. *etcu*. Sub. (*ϵ*)*tcu·* as stem is clearly indicated in *gi·-tcu·* "on, upon," which contains local *gi·* (cf. *gi·-tca* "behind," no. 2.), hence lit. "at head." Cf. Chum. (San Luis Obispo dialect) *co* "head, hair" (for possibly more remotely related forms, see *Yan.*, no. 169; e. g. Sh. *innux* "hair," assimilated from **is-nux* from **isu-nax* "head-hair" ?)
15. liver, gall: *gi·ko*, *gi·ka* "liver" (with *g-* prefix), *pu·ru i·ko* "much gall, gally." Cf. Sal. *t-erk*, *t-iek* "animal's gall"; E. Po. *b-iko* "bitter (with adjectival *b-* prefix? see morphology); Was. *ts-iga-l* "kidney."
16. mouth: *d-a·u·*, *d-a·ų*, *d-ą·u·*, *d-aŋgwa* ("thy mouth"), Sq. *d-ahnu* (= *-ą·u*?), Ar. *d-anwa* (=*-ąwa*), *d-aowa* ("thy mouth"), Br. *d-aghu* (=*-aγu*, *-ąγu*?). This word, with its evidently elusive phonetics, seems to be properly *-ąγwu*, *-ąγwa*. Cf. Chim. *h-awa*; Sh. *au*, Ach. *aph*; Was. *-ha-ŋa* (noted also by Lehmann); Po. *aha*, *ha*, *ha-mo*; Moh. *ʽi·ya*, Dieg. *ʽa·*, Kiliwi *axaa*, Cochimi *xaa*; Chum. *ök*, *uk*, *ao-tc*; Ton. *kala*; Com. *xal* "lip"; Hokan **a*(ŋ)*γwa*?
17. navel: *d-u·mi·u·*. Cf. Chim. *h-onapu*; Ats. *ts-up'-dis*; Was. *d-i·p*. Hokan **-unapiw-*? (**-unap-*, with loss of second vowel, assimilated to **-ump-*, whence **-upp-* and **-umm-*, according to language?).
18. neck: *ha·pu·* "nape," *tu·-ha·pu·* "neck," compounded in *a·pu·-nana* "necklace," Sq. *abu-lu* "neck," Ar. *apa* ("thy neck"). Cf. Was. *d-i·bu* "neck" (noted by Lehmann); Dieg. *ipuk*, Wal. *ipuk*, Yum. *epok*; Ton. *hepei*(*a*); perhaps also Sal. *ape-nik* "necklace."
19. nose: *d-a·ko*, compounded in *d-aga-mba* "nose-big, aquiline nose," Sq. *t-a'ko*, Ar. *d-a·hka*, *d-a·ka* ("thy nose"), Br. *d-akko*. Cf. Moh. *-i·hu·*, Dieg. *-exu*; Es. *h-oci-s*; Chim. *h-oxu*;

Kar. *yuʃi*; Se. *uuf*, *hiʃ*; Chum. *n-ox̣c*, *n-ox̣*; Com. *yax*; Cot. *ya'x*, *yax*. Hokan **yaxu*?[7]

20. tooth: *si·n*^{v}*u·*, *si·n*^{v}*a* ("my, thy tooth"), Sq. *si'mu*, Ar. *si·n*^{v}*u*, Br. *sinnyu*; properly *si·'-n*^{v}*u·*? Cf. Ach. *it̓sa*, Sh. *ϵ·tsau*, New River Sh. *k-it̓sau*, Ats. *it̓sau*; Chim. *h-utsu*; Yan. *k‘i-ts'au-*; Chum. *sa'*; Sal. *suluknai* (with inserted plural *-l-* ?).

21. wing: *t-ala·la*, *d-ala·la* "wing," also *t-ala·la* "bat," Ar. *t-alala* "feather." With final reduplication, which is quite characteristic of Hokan (see Chim., Po., Was., Es., Sal.). Cf. Ats. *palala* "butterfly"; Was. *palolo* "butterfly"; C. Po. *lila-wa* "butterfly"; Sal. *ṭ-api-lale* "bat." These Ats., Wash., Po., and Sal. forms are probably derivatives of an old Hokan stem indicating "wing, to flit" (cf. Sub. "bat" above).

B. Animal Nouns

22. frog: *kosta-lu·*. Cf. Was. *ko·da* (noted by Lehmann); Chim. *qâtu-s* (i. e. *ḱɔ·tu-s*).

23. rabbit: Tlap. *tcuaxi*. Cf. Yan. *dju·wa*; Es. *tcici*. Hokan **tcux*(*w*)*a*?

24. spider: *a·x̣ka*. Cf. Ach. *ts-axa*, Sh. *-t-aki* of *kusi-taki*; perhaps also Was. *ts-uku-* of *tsuku-maŋ*; Sal. *l-aka-* of *laka-na*. Ach. *ts-* prefix: Sh. *t-* (*d-*) prefix is illustrated also in Ach. *tsukxa* "blackbird," Ats. *tsokha*: Sh. *duk'i*; cf. also Ats. *ts-up-dis* "navel"; Was. *d-i·p*: Chim. *-onapu* (no. 17). Was. *ts-* prefix is indicated also in *ts-iguguc* "belly": Chum. *akcuu*; see also nos. 15, 52. For Sal. *l-* prefix, cf. *l-ϵ·m* "sky," no. 44.

25. worm: *un*^{v}*u·* (from **imu·*? cf. *n*^{v}*qu* and *inu-*, nos. 7 and 10). Cf. Chim. *hemu-ta*; Sal. *t-imehai*, *t-almui* (these two Sal. forms can hardly be disconnected; perhaps *-l-* of *t-almui* is collective, as frequently in Sal., leaving as stem *-ime-*, *-amui*).

26. ant: *i·x̣ki·* "olosica" (kind of ant). Cf. Sal. *ilkat* "ant" (with collective *-l-*? cf. nos. 20, 25).

27. lizard: *ω·s'n'go·* (*ω·sɴḱo·*? Lehmann's orthography is not quite clear to me). Cf. Sal. *swakaka*, *cwa·keḱa'*. Hokan **aswanḱa-*, **aswa'nka-*? This word seems to be derived from Hokan **aswa*(-'*n*-), **iswa*(-'*n*-) "fish": Po. *ca*, *aca*; Sal. *cwa·-n*, *swa-n*, *cwa-'ɴ*; Ton. *esva-la-n*.

28. louse: *ia·x̣a*. Cf. Sal. *t-ik'e'*, *ike*.

29. woodpecker: *ϵn*^{v}*u·*. Cf. Sal. *t-enak*. Hokan **inak*?

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[7] This example is very doubtful, as Sub. *da·ko* seems to belong rather with another group of forms, e. g. Arawak *-taki·*, *-tako*, Canixana *-taga*, Chorotiga *-talso* (see A. Trombetti, *Elementi di Glottologia*, p. 320).

C. Natural Objects

30. clay, mud: *gu·ba* "clay," *ra·-gu·ba* "dirt," Sq. *gu·ba* "earth," Ar. *guuba·* "earth"; Tlap. *kuba* "hill." Cf. Was. *tsa-kopi* "mud."

31. day, today, sun, moon: *endo*, *ϵndo* "today," Sq. *endo-la* "day-this" (see no. 104), "today," Ar. *endo* "day," *indo-la*, *endo-la* "today"; from **ī-nwa* "this day" (see no. 107a; for phonology, see below). Cf. Moh. *anya·* "sun"; Chum. (S. Cruz dialect) *t-anum* "sun"; Sal. *na'* "sun"; Coa. *a·nua* "month." Jere belong perhaps also Po. *la* "sun," *ala-ca* "moon"; Chim. *ala*, *ala* "sun, moon"; Com. *al* "sun"; Chon. *ora*, *kal-ora* "sun"; also Was. *lot* "yesterday" <**(a)lwa-t* "day-that"? Hokan **anwa*, **alwa*?

32. day: *bii·*, Sq. *bi·*, *bi·-lu*, Ar. *bii·*; Tlap. *bihi* (read *bii*?). Cf. Was. *d-i·be* "sun, moon, month," *ϵ·be* "day" (also noted by Lehmann); Moh. *'ipily-k* "hot, day," Dieg. *'upił* "hot"; Chon. *epał* "hot."

33. day: *-ci·i*, *-x̣si·-*, *-si* "day" in adverbial compounds *di·ci·i* "yesterday," lit. "that (past) day" (for *di·-*, cf. no. 107), *ga-x̣si·-yu*, *ga·-si* "tomorrow," lit. "that (coming) day" (for *ga-*, cf. no. 106; this demonstrative may be identical with Sub. *ga-*, verbal prefix denoting futurity); Sq. *dı·cı* "yesterday," *ga-si* "tomorrow"; Ar. *di·ci* "yesterday," *ga·si* "tomorrow, in the morning." Cf. Es. *asi*, *aci* "sun," *asa-tsa* "day"; Chim. *asi* "day"; Sh. *atcaii*, Ats. *assi·yi* "day"; Se. *sax* "sun," *isax* "moon"; Chum. *icau*, *al-ica*, *al-aca* "sun." Ton. *etc-nan* "day"; perhaps also Po. *m-atci*, *m-adji*, *m-itci-l* "day" (for *m·* see Morphology); and Sal. *icxai*, *esxai* "morning, day." Hokan **asi*, **isa* is also found, in all probability, as incorporated *-si-* in Yan. *-si-ri-bal- . . .-'a-*, suffixed to numeral stems and indicating "so and so many days (nights) elapse," literally "to have so and so many suns go down and up" (*-ri-* "down," *bal-* "up," *-'a-* causative); perhaps also in Yan. *b-asi·-* "to be yesterday, night" (refers to periodic lapse of time, not to darkness), for *b*-prefix see Morphology.

NOTE TO NOS. 31-33. In comparing these three words for "day," one is led to surmise that Hokan **anwa* (**alwa*) (no. 31) meant properly "luminary, sun, moon," Hokan **ipi* (no. 32) "day (as period of warmth), day-heat" (observe that Wash. *d-i·be* "sun, moon" is derived by means of nominalizing *d-* from *ϵ·be* "day," not reversely), **asi* (no. 33) "daylight, period of solar light." Another term for "sun" is found in no. 46.

34. earth: *u·mba*, *d-umba·-lu·*, Ar. *umba·*. Cf. Chim. *ama*; Po. *amma*, *ama*, *ma*; Moh. *amaṭa*, Dieg. *amat*; Es. *maksa-la*, *matra* (i. e. *maṭa*); Se. *amt*; Chon. *-ama-ts*, *ma-ts*; Kar. *ma-ruk* "land-ward, to shore"; Was. *ŋauwa* "earth" (<**ma-wa*, **ama-wa*; cf. *d-aŋa-l* "house": Sh. *amma*, *ŋi-* "with the

head": Chim. *me-*, *-ŋa-wa* "besides": Hokan **-ma* "with, also," see no. 114). Hokan **ama* "earth, land" may, further be ultimately identical with or related to Hokan **ma* "place, there": Yan. *-ma-* verb suffix "there, at that place," *-madu* "place of"; Chim. *-ma*, *-mu* suffix for place names; S. W. Po. *ma-li* "there, place"; Sal. *ma-*, *um-*, *t-um-*, *t-uma-* locative prefix "place where, whither." If **ama* "earth" and *(*u*)*ma* "place" are identical, Sub. *u·mba* "earth" and Sal. *uma-* "place" may be direct reflexes of Hokan **uma-* "earth, locality," while **ama-* may be assimilated from this form; perhaps **amwa* is to be assumed, with *mw* to Sub. *mb*.

35. earth: *ba·i-lu* "on the ground"; Tlap. *bayi* "earth." Cf. Yan. *bi·-wi* "earth, soil" (*-wi* is collective as in *wawi* "house," *'iwi* "firewood"); Sal. (Migueleño dialect) *ṭ-apaiye'* "dust," (Antoniaño dialect) *ṭc-ayiya* (from **-apiya*; in this dialect *p* often disappears and *p'* becomes '). Hokan **apai-*?

36. fire: *a·gu·*, *d-a·gu·lu·*, Sq. *ahku* (i. e. *a·ku* probably), Ar. *agu*, Br. *agu*. Cf. Yan. *'au-na*; Sh. *a·wa* "wood," New River Sh. *ga-'au* "wood," Ats. *ahawi* "wood," Chim. *hau-na* "tinder" (from "fire-wood"); Es. *a-nix* "fire" (stem *a-*); Moh. *a'auva*, Dieg. *a·u*, Yuma *au*, Kiliwi *aau*; Sal. *ṭ-a'au'*. Hokan *(*a*)*'awa*.

37. flower, bloom: *di·i*; also *di·i·* "cortés, tree with beautiful white blossoms." Cf. Chim. *atre·i* "flower," i. e. *aṭe·*^{i}.

38. grass: *d-aca-lu·* Cf. Was. *hos-pi*; Ats. *qussi-dr* (read *xussi-ḍ*?), Sh. *xatsi-d*. Hokan **ax̣wasi*? Perhaps Sub. *-aca* is to be read *-a'ca*, *-axca*, assimilated from older **-axci* < **-ax̣*^{u}*si-*. But *d-aca-lu·* is related to *ma·ca* "green" (see no. 88).

39. leaf: *i·na*, Sq. *i·na*, Ar. *ina*. Cf. Sal. *c-tan'*, plur. *s-tana-nel* (*c-*, *s-* before consonants is clearly prefixed and may be eliminated as nominal prefix morphologically parallel to *ṭ-*, *t-*; cf. Sal. *c-ka·k'* "crow": Yan. *ga·gi*); Chim. *hita-xai*, *tahal-wi*. Hokan **itana*? (Sub. *ina* to be read *inna*, assimilated from **itna*?)

40. moon: *uku·*, *d-uku·-lu*, *d-u·x̣ku·-lu·*, Ar. *d-uku*, Br. *d-ukku*; compounded as *-ku·* in *imba-ku·* "one month." Cf. Chum. *axwai* (San Buenaventura dialect), *owai*, *awai*, *t-awa*. Hokan **ax̣awa-*, **ux̣awa-*?

41. mountain: *aŋwa*, *aŋgwa*, Ar. *a·na*. Cf. Chim. *awu*, *aumi-ya*, *a·ma*; Po. *d-ano*, *d-ono*, *k-ano* (*k-no*); Maratino (J. R. Swanton, *American Anthropologist*, N. S., 17, p. 38) *ka t-amu-gni* "to war on the mountain." Hokan **aŋwa*? (for Sub. *ŋw*: Chim. *w*, cf. also no. 16).

42. night: *m-i·du·u·*, *m-i·du·-lu·* (adjectival derivative in *m-*, cf. no. 123), Sq. *m-idagina* "black." Cf. Coa. *tako·-m* "night," perhaps also Atakapa *te·gg*. Coahuiltecan-Subtiaba **itak*(*u*)?

43. seed: *ia·x̣a*. Cf. Sal. *ayexteya* (with collective *-te-* infix in older **ayaxaya*, with peculiar type of final reduplication? cf. Sal. *t-icxeplip* "feet" with *-l-* infix from finally reduplicated **-icxepip*), older stem (*a*)*yaxa* probably retained as *ya·ha*, *yaxa* "frijol"; probably also in Chim. *ama-ya·qa* (read *-ya·xa*?) "sand," literally "earth-grains." Hokan **ayax̣a*?

44. sky, above: Sq. *d-ehma-lu*, Ar. *d-ehma* "en haut," Sub. *na-gi·ma* "to mount" (see no. 60; for *g*-prefix of *g-i·ma*, see no. 124); perhaps also Tlap. *mi-* of *mi-xkwi* "sky." Cf. Es. *imi-ta* "sky"; Moh. *ammaya*, Dieg. *ammai*; Chon. *emaa*; Sal. *l-ema*, *ł-em*" sky," *l-e·mo'* "over, on, above"; Se. *ami-me*; Yan. *'ap'-sa*; Chum. *al-apa*, *hal-acpai*; Chim. *tc-emu*; Ach. *ts-amiki*; Com. *ape-l*. Hokan **ima* (**i'ma*)?

45. stone: *si·-nu*, *six̣-nu*, Sq. *isi·*, *isi·nu*, *i·si* "stone, flint," Ar. *si-nu*; Tlap. *istci*. Cf. Kar. *aca* "rock"; Sh. *itsa*; Es. *ciefe:* Sal. *t-cxa'*, *cxap*; Chum. *x̣öp*; Po. *xabe*; perhaps also Chim. *qa·'a*, *kaa* (if to be read *xa·'a*). Hokan **ixa'*, **ixa'-pi* (Sub. *isi·* assimilated from **isa'* from **ixa'*)?

46. sun: *d-ax̣ka·-lu·*, Sq. *ahka*, Ar. *ahka*, Br. *d-aska*; Tlap. *'axka*. Cf. Se. *tahx*; Ton. *taxa-c*, *taga-c* "day"; perhaps also N. E. Po. *-daka* in *maṭi-daka* "day-sun" (though this may belong rather with *da*, *hada* "sun" of other Po. dialects). Sub. *ax̣ka* is probably related to *na-yax̣ka* "to shine," hence *d-axka·-lu·* may be properly "the shining body." Hokan **tax̣a*(*-ka*) "sun" is, then, perhaps an old nominalized form in *t-* (see no. 120) from a verb **ax̣a*(*-ka*) "to shine (of sun, moon)"; **ax̣awa* "moon" (see no. 40) may be related to this.

47. tree, wood: *i·ci*, *i·ci·*, *d-i·ci-lu·*, Sq. *i·ci*, Ar. *ici*; Tlap. *itci* "tree." Cf. Chon. *ehe*, *kal-eke* "wood, tree" (*kal-* is nominal prefix, see no. 106); Se. *ehe*; Kiliwi (Yuman) *xaı-pak*; Po. *ahaı*, *hai*, *xai*; Com. *xai*. Hokan **ixai*?

D. Cultural Objects

48. axe, hatchet: *a·x̣wa*, Ar. *ah-nu*; probably also compounded with *si-* "stone" (see no. 45), assimilated to *sa-*, in *sa-x̣-nwa* (or *s-ax̣-nwa*) "copper, axe (of metal)," *s-ax̣-nwa-lu* "iron, machete," originally "stone of axe, material of axe," hence later "copper, iron" and "axe of copper, iron." Cf. Chum. *owa*, *uwu* "knife" (from **ax̣wa*?; cf. no. 40); possibly also Was. *ta·wi*, *ta'wi* "knife" (read *ta'wi*? but *t-* is not here equivalent to nominal *d-*, as is shown by possessive forms like *di-ta·wi* "my knife"). If these Chum. (and Was.) forms are not to be understood as having *-'w-*, they can hardly be compared with Sub. *a·x̣wa*, *ax̣-*, and are more likely to belong with Hok. **awai* "stone" (see *Hok.-Coa.*, no. 51).

49. bow: *d-i·ci·-lu·*. Cf. Chum. *t-axa*, *ax*; Sh. *xau* (doubtful because ordinarily Hokan *x* appears as Sh. *s*, *ts*, while Hokan *x̣* appears as *x*); Sal. *p-axuwe* (same difficulty as for Sh.); Ton. *nixau* (if analyzable as *n-ixau*); Com. *xai*; Kar. *gai*. Hokan **ixai*? (For phonology cf. Hokan **ixai* "tree, wood," no. 47. It is possible that there are two distinct stems here: **ixai*, cf. Sub., Ton., Com., Kar.; and **ax̣au*, cf. Sh., Sal.; Chum. might belong to either. But it is more likely that they go back to one source and that **ix̣ai*, **ix̣au* was in some dialects shifted to *ixai* because of palatal position of *i*-.)

50. house: *gwa*, *gwa-lu·*, Sq. *gua* "house, hut," Ar. *gu·a*, *iwa·*, Br. *gua*; Tlap. *gugua*. Cf. Yan. *wa-wi*, *-wa*; Chim. *a·wa*; Es. *iwa-no*; Moh. *ava*, Dieg. *awa*; perhaps also Chum. *p-awayic*; Com. *wa-mak*. From Hokan **iwa*, **awa*, **wa*. I prefer to keep apart Hokan **ama* "house" (see *Was.*, pp. 106, 108), though it is quite possible that these stems go back to one source; for Sub. *gw* from *w*, see Phonology.

51. road: Tlap. *is-kamba* "camino real, highroad" apparently compounded of *is* and *kamba* "road" (cf. Sub. *gamba* "road, street"). If *is-* is to be taken as meaning "trail" (Indian trail as contrasted with road?), which is far from certain, it may be compared with Chim. *hissa* "trail"; Yan. *'i·ya*; Ach. *i'de^u*; Po. *hida*, *da* "trail, door"; Tonto (Yuman) *inya* "trəil." Hokan **itya* (**izya*)?

52. shirt: *eme* "camisa de mujer," *me-x̣n^{y}a* "shirt, huipil," *mi·i·da* (=*mi·-i·da*?) "camisa de hombre," Ar. *mi·da-xuberu* "veste de coton." Cf. Yan. *mi-wi*, *-mi* "hide, blanket"; Tonto (Yuman) *ya-mia* "skin, hide," Yuman *-mi*, *-me* "hair" in Moh. *'iavu-me* "beard," Dieg. *'ale-mi* "beard" (cf. Moh. *'i·ya*, Dieg. *'a·* "mouth"); Chim. *hima* "hair"; Com. *emo-l* "skin, hair on body"; Sal. *l-emi'* "rabbit-skin blanket" (for *l*-prefix in Sal., cf. no. 44), *cl-emi-y'a* "coat"; perhaps also Was. *ts-ime-l* "beard" (for nominal type *ts-* . . . *-l*, cf. *ts-iga-l*, no. 15); Po. *ts-i'me* "hair, fur." Hokan **ima* and **ami*, assimilated **imi* "hair, fur, skin, hide, blanket, coat"?

53. string: *u·n^{y}u*, *d-u·n^{y}u*, *d-u·un^{y}u*, *d-u·n^{y}u-lu·* (read *unn^{y}u*?). Cf. Sh. *imme* "sinew" (from **ipme*), Ach. *pim*, Ats. *ippiu* (from **ipm^{y}u*); Yan. *ba·ma* "sinew.) These forms seem to reconstruct to **ipamu*, whence, in Sub. **ipmu*, **imm^{y}u*, assimilated to *unn^{y}u* (cf. nos. 7, 10, 25).

E. *Personal Nouns*

54. child: *-ku·*, *-ku* in *sɛ-ku·* "child," Sq. *sa-ku-le* "son," *sai-ku-la* "daughter," *ni· ku-yu·* "my son-in-law," *gu·-ku-yu·* "my daughter-in-law" (*-yu·* "my"; *gu·-*, *-gu* "female," e. g. *gu·-n^{y}a·ni* "young woman," *gu-mba* "old female," *ra·ba-gu·*

"woman"); Tlap. *-gui* in *gu-gui* "daughter-in-law." Cf. Tonto *ko-tye* "small"; Es. *oxu-s-k*, *uku-s-k*, *uku·-s* "small, infant"; Po. *-ku* "son, daughter," *ku-* "boy, girl infant," *ku-ts*, *ku-tc* "small," *ku-s* "infant," *kawi* "small, infant, boy"; Chum. *ku-tco*, *gu-nup* "child"; Ton. *-xun* in *ca-xun* "small," *wi-xun* "girl"; Cot. *kuwo-sam* "small, young"; Kar. *kwa·n*, *kwaan* "small, young." Hokan **k'u* "small, child"? Sub. *sɛku·* "child" may go back to **isa-k'u* (see Phonology) and correspond to Ton. *ca-xu n* "small."

54a. man: *r a·bu* "person, man" <**r a·ba-k* (see Phonology, for *r* prefix see Morphology), *r a·ba gu·* "woman" (literally "man-female"). Cf. Es. *efe-hi* "people"; Po. *ba*, *ba-ia* "man." Hokan **ipa-*?

55. mother: *d-u·tu·*, *d-u·tu·-lu·*, compounded as *du-* in *du-ṛi·n*^{y}*a* "mother-old, grandmother," Sq. *autu* "mother," Ar. *d-utu*, *d-uta* ("my, thy mother"); Tlap. *r-utu·* "my mother," *r-uta-lo* "our mother." Cf. Chum. *tuyu*, *tuɿ* "mother"; Kar. *ita*, *ta-t*; Ach. *da-tyi*; Yuman **tai* in Moh. *hin-tai-k*, Dieg. *tai-l*^{y}, Yum. *ta-l*^{y}*e*, Cochimi *ka-tai*; Coa. *tai*; perhaps also Was. *-la*. Hokan **uta-*, **utay-*?

56. sister: *sɛ-ka*, perhaps from **isa-ka* (cf. no. 54). Cf. Was. *-i·sa* "older sister"; Es. *itci* "sister"; Sh. *atcu*, *atci* "older sister"; Ach. *ab-is* "older sister" (*ab-* probably as in *w-ab-aui* "older brother"); Kamia (Yuman) *esan* "younger sister," *intca-tcan* "older sister" (for *intca-* cf. *intca-mal* "older brother"), Cocopa *hidj-isa* "older sister," S. Dieg. *intca-itcan* "older sister," *sal* "younger sister," N. Dieg. *etcan* "older sister," *esan* "younger sister." From these forms Hokan **isa* "sister" may be inferred.

F. Verbs

57. be: *-tsu* in *iku· ci·-ni·-tsu* "I am, dwell" (*iku·* "I;" *ci·-ni·-* perfective, hence properly "I have sat down"). Cf. Yan. *dj ι-* primary verb stem "to sit, dwell;" Chim. *-tcu-* "to lie on ground, sleep;" Sal. *-atce-* "to sit" (*k-atce-k* "to sit down," *ṭ-atce-x* "seat"); perhaps also Es. *k-oso-* "to sit down."

58. beseech: *-waa* in *na-waa* "pedir" (*na-*, in this and following examples, is present tense prefix). Cf. Yan. *-wa-*, *-wa·-* secondary verb stem "to weep;" Chim. *-wo-* "to cry;" Ach. *-wo* "to cry;" Coa. *wa·yo* "to cry;" Karan. *owiya* "to cry."

58a. bring: *-g-aya·a*, *-yaa* in *na-gaya·a* "to bring, drag," *iku· gi·-n*^{y}*aa* "I have brought" (properly "I have been brought"? *gi·-* is passive participial) <**-ni-yaa* (*ni-* is preterital), also *-g-a·ya* in *na-ga·ya* "to have, hold, carry" (for *g-* prefix, see Morphology). Cf. Sal. *p-aye-m* "to carry, bear" (for transitive *p-* see Morphology); C. Yan. *'ai-* "to carry." Hokan **aya-*?

59. burn: *-g-amo* (used of fire) in *na-gamo* (for *g* prefix see Morphology.) Cf. Chim. *-maa-*; Ton. *mai*; Com. *-makua*.

60. climb: *-g-i·ma* "steigen" (*g*-prefix as in no. 59); cf. corresponding nominal form *d-ehma-lu* "sky" (no. 44). Cf. Yan. *ma·-* "to climb."

61. come: *-a*, *-aa* of *na-a*, *n*^{y}*-aa* (probably from *ni-aa*; *ni-* is preterit). Cf. Chim. *-a-* "to go"; Yaṇ. *'a-* "female goes." But *iku· ni-naa* "I came" and *iku ci·-ni-naa* "I have come" seem to indicate Sub. *-naa* as stem; these forms are perhaps remade from present *na-a*.

62. come: *-tca* in *na-tca*. Cf. Yan. *dja-* primary verb stem "to proceed, move" (see *Yan.*, no. 31); Po. *tca*, *tca-k* "to run."

63. come: *-kų·i* in *na-kų·i*. Cf. Yum. *ki·ri-k*, Dieg. *kiyu*; Coa. *kal*; Karan. *kas*, *ka's*; as secondary stem also in Yan. *-k'i-* "hither"; Chim. *-k* (e. g. *-wa-k* "to come," cf. *-owa-* "to go"); Was. *-u-k* "toward the speaker" (cf. *-u-e* "from the speaker"); Sal. *-x* (e. g. *ia-x* "to come," cf. *ia* "to go"); Com. *-k* in *ya-k* "to come." Hokan **k'wali* "to come," as secondary stem reduced to **-k'(w)i*?

64. cry: *-mbi·ya* in *na-mbi·ya*; simpler stem *-mli*, *ϵmbi* preserved in *ϵmli* "owl." Cf. Yan. *mi·-* "to cry, wail;" Po. *mi-na*, *mi·-n-wan*, *mi·-mai* "to cry;" Tonto *mi* "to cry, scream, sigh," Moh. *himi-n* "to cry, lament"; Sal. *'ame-s*, *ama-s* "to shout, to cry." Hoken **ami*, assimilated to **imi*?

65. die: *-ga-n*^{y}*u·* in *na-gan*^{y}*u·* (for *g* prefix, see Morphology; *-n*^{y}*u·* from **inu·** < *-imak* or **-imax(w)* ?). Cf. Es. *moho* "he died"; Sal. *-ama-* in *c-aᴍ-tel* "corpse," *p-ama-t* "to die," *a·m(k)* "to kill"; Yan. *am'dji-* "to kill"; Chon. *maa-* "to kill."

66. drink: *-n*^{y}*a* in *na-n*^{y}*a* (from **ima*, cf. no. 7). Cf. Wash. *ime* "to drink," nominalized as *d-ime* "water" (from **ima*; Washo *e* regularly results from *a* when preceded by *i*); Es. *imi-la* "sea"; Chum. *ma*, *tc-l-imi* "stream," possibly also *s-x̣-ami* "ocean" (note that *ma* and *tc-l-imi* can only be reconciled by assuming **ima*, which is precisely what Sub., Was., and Es. independently lead to). Hokan **ima* "water, to drink"?

67. eat: *-iu* in *g-iu*, *g-iu·* (intr.). Cf. Was. *iw*, *eu* "to eat" (tr.); Po. *wa* (with plural object). Hokan **iwa* "to eat" (tr.; intransitivized in Sub. by *g*-prefix, see Morphology)?

68. go: *-x̣ka*, *-ska* in *na-x̣ka*, Ar. *na-ska*. Cf. Ton. *xa*; Coa. *ka-l* "to go," *ka-i* "to walk"; perhaps also Sal. *ica*, *ica·-k* "to go, to walk" (<Hokan **ixa-*?).

69. go: *a·yu*, *a·ya* "go!" Ar. *a·iya* "to come," Sq. *aiyu* "to go," perhaps also *-d-ia-* "to cause to go" in *na-dia-ma* "to place" (<to cause to go with"?; for *d-*, see no. 125; for *-ma* "with," see no. 114). Cf. Sal. *ia*, *ie* "to go," *ia-x* "to come"; Es. *iyu* "to come"; Was. *iye* "to walk, go," perhaps also

aya "to move running," *ya-ŋi* "to run (plur.);" Ton. *ya-ku-* "to go"; Karan. *ye*.

70. go: *-g-a·u* in *na-ga·u* "to go," *ci·-ni-ga·u* "ya se fueron"; also *g-a·wi·*, *g-a·gwi·* in *na-ga··wi*, *na-ga·gwi·* "to flee, go away" (for *g-*, see Morphology). Cf. Po. *wa*, *wa-l* "to go, walk"; Chim. *-owa-*, *-wa-m-* "to go," *-wa-k-* "to come"; Kar. *va-r(-am)* "to go"; Was. *-u-* as secondary stem in *-u-e* "from the speaker," *-u-k* "toward the speaker," *-wa-* secondary stem "to go" (e. g. *baaci-wa-a* "he went in"); Ton. *wa-na* "they go"; Cot. *awo-yo* "go over there!" Karan. *wa-na* "go away!" At. *wa-n* "to go." Hokan **awa* "to go away" (note parallelism of Sub. *g-a·u*: Hokan **awa* and Sub. *g-iu*: Hokan **iwa*, no. 67)? From this Hokan stem is perhaps formed also **-awa* as postposition "away from": Po. *-awa* "from"; Was. *-uwe* "from."

70a. lack: *d-a·wa*, *d-agwa* "there is not" (properly "to have lacking"; for *d-* see Morphology). Cf. Sal. *k-awa* "to be lacking"; with intransitive *k*-prefix); Yan. *wɔ·-wai-*, *wa·-wai-* "to miss" (*-wai-* secondary verb stem "to perceive").

71. laugh: *ndiɛgu·* in *na-ndiɛgu·*. Cf. Sal. *ilik*;c. Yan. *'alai-·* "(several) laugh."

72. make: *-da* in *na-da*. Cf. Sal. *eta*, *eta'*.

73. peel: *-di·i* in *na-di·i* "to peel (fruits)." Cf. Yan. *dɛ·-*, static *di·-* "to peel, shear."

74. pour: *-x̣kwa* in *na·-x̣kwa* "to pour out, strew out." Cf. Chim. *-qo-* "to pour," *-qox-* "to spill" (read *-ḱo-*, *-ḱox-* from **-ḱwa-*, **-ḱwax-*?).

75. run: *-g-agnu*, *-agal-* in Sq. *na-gag-nu* "to run," *d-agal-ni* "runner" (for nominalizing *d-*, see no. 120; perhaps better analyzed as *-agalni* with *-ln-* as nasalized *l* or some other variant of *l* or *n*). Cf. Yum. *kono* "to run," Dieg. *ganau*; Was. *igelu* (plur.); Po. *gadi*. Hokan **ikalu*, **ikali*?

76. see: *-ya* in *na-ya-ŋga* (*-ŋga* probably enclitic pronoun "him"), Sq. *da(i)-ya* (*da-* probably imperative prefix), Ar. *da·(i)-ya*. Cf. Moh. *iyu*, Dieg. *əwu*. Hokan **ayu* (assimilated to **aya*, *ya* in Sub.)?

77. sit: *-t-a·u* in *na-ta·u* (for factitive *d-*, *t-* prefix, see no. 125). Cf. Yan. *wa-*; Chim. *-wo-* "to sit," *wa-* "by sitting on"; Ats. *we-* "by sitting on"; Tonto *oa* "to sit," Wal. *-ua*, Kiliwi *owau*. Hokan **awa* "to sit" (older Sub. **t-awa* "to make sitting, have as seat")?

78. sit: *-a·mo*, *-a·ma* in *k-a·mo* "to sit" (for *k-*, *g-*, see Morphology), *k-a·ma goo-yu·* "estoy sentado en la casa." Perhaps originally "to dwell" as denominative from Hokan **ama* "house." Cf. Was. *d-aŋa-ł* "house," *aŋa-l* "to live"; Chum. *ma-'m* (or *m-a'm*) "house"; Sal. *ṭ-a·m*, plur. *ṭ-ama·-neł*, *t-a·ma·-ten*, as denominative verb *k-ᴍa·-i* "to live, possess home" (properly "to be housed"); Sh. *amma*. Hokan **awa*

"to sit" (no. 77) may also well be derived from **awa* "house" (no. 50).

79. sleep: Sq. *ami*. Cf. Sal. *me*; Com. *n-eme-t*; Karan. *ιm*; perhaps also Was. *ma-ça-m* "to lie (sing.)," *maya-c* "to lie (plur.)." Hokan **ami* (**imi*) or **amay-*?

80. sleep: *-apo*, *-apu·*, *-apa* in *g-apo* "to lie (in sleeping)," *na-gapu·* "to sleep" (for *g*-prefix, see Morphology), *iku· na·tcu ma-dapa* "I shall sleep" (literally, "I go with sleeping"). Cf. Chim. *po-*, *poi-* "to sleep"; Chum. *k-opok* "dead"; Es. *poko-* "to sleep"; Sal. *p-apa·*^{i} "to copulate" (old transitive in *p-*: "to lie with, have one lie").

81. sleep: *-gu·* in *na-gu·*. Cf. Sal. *kau*, plur. *kaxau*; Chum. *ukwe*. Hokan **ukau*?

82. smoke: *-s'i·x̣a* in *na-si·x̣a*, *na-s'i·x̣a* "to smoke." Cf. Po. *tsaxa*, *saxa*, *saha* "smoke"; Es. *tcaxa* "smoke"; possibly also Yan. *tc'ɛ·ḱau-na* "smoke"; Sal. *ts'opo* "fog."

G. Adjectives

84. alone: *mi·no*, *mi·na·u* "alone, self." Cf. Was. *mi·le* "all (from **mi·na*? Hokan *n* seems not infrequently to appear as Was. *l*, e. g. *l-* "I" <**n-*).

85. big, fat: *umba* "big, fat," *ombo* "big, strong, thick," *-mpa·u* "big, thick," as augmentative suffix *-mba* (e. g. *a·x̣-mba* "old, mature" of males, *gu-mba* "old, mature" of females), Sq. *umpa* "great," Ar. *umba* "fat." Cf. Ach. *äphau* "fat" (adj.); Chim. *-xu-* (from **-p'u-*) "fat" (adj.); Yan. *p'ui-* "to be fat"; Po. *pui* "greasy"; Sal. *upent* "fat" (n.). Hokan **up'awi* "fat, stout"?

86. full: *m-ax̣ni·* (for *m*-prefix in adjectives see Morphology). Cf. E. Po. *ṁinam* "to be full, fill"; Yan. *b-a'ni·-* "to be full" (for *b*-prefix in adjectives see Morphology). Hokan **m-a'ni-*, **p-a'ni-*?

87. good: *m-i·x̣n*^{v}*a* (with *m-* prefix as in no. 86). Cf. Ton. *hinox*; Cot. *k-ɛnas* (for *k*-prefix see Morphology); Was. *aηau*, *t-aηau*; (*-η-* from *-x̣n-*?) Sal. *p-inxa* "good, successful (thing)" (for *p-* prefix see Morphology; *-nx-* from *-x̣n-*?); Moh. *ahɔ·-t* "good," *ta-ahana* "real, good," Yum. *axo-t* "good," Dieg. *əxan-n* "good" (Yuman **axana-t*?) Hokan **ihna-xw-*, **ix̣ana-*?

88. green, blue: *m-a·ca* (with *m-* prefix as in no. 86), nominalized in *d-aca-lu·* "grass (sacate)," Sq. *maca* "green," Ar. *maca* "green"; Tlap. *matca* "green." Cf. Se. *ko-masso-ł* "brown," *mosso-ł*, *k-maso-ł* "yellow"; Chim. *himamsu-t* "green, blue, yellow" (reduplicated from **-masu-*); Sal. *t'ə-mas* "grass" (nominalized from adjectival form **masa* instead of directly from radical **-asa* as in Sub.), perhaps also *ca·-* (from **asá-*) in *ca·-xa'*-NE "blue." Hokan **asa-*, **asu-*, perhaps related to **ax̣wasi*, **ax̣*^{u}*si* "grass" (see no. 38)?

89. high: *m-i·si·ta* (with *m-* prefix as in no. 86). Cf. Sal. *-esu-*, *-usu-* in *k-usu-lulna'* "straight (tree)" (from "high-straight"? cf. *k-atu-lulna* "straight [road]"), plur. *k-esu-lu-ti-na.*

90. large: *d-a·gu* (with *d-* prefix, see no. 121). Cf. Chon. *kweka*; Se. *k-ako-ł* (for *-ł* cf. adjective forms in *-ł* in no. 88); Ton. *kwalo* "great"; At. *kome* "great"; perhaps also Sal. *k-a·xwen* "much." Hokan **aku*, **akwa*?

91. little: *tci·tci·* "little, younger brother," *r-i·tci* "little," diminutive *-tci* (e. g. *i·ya-tci* "water-little, brook"), Sq. *tcitci* "small, child," Ar. *tci-tci* "little." Cf. Chum. *tcitci* "child"; Po. *b-itcu*, *k-itci-du* "small"; as affixed element in Kar. *-itc* diminutive noun suffix; Po. *-ts*, *-tce*, *-tse-n* in relationship terms; Chum. *-itc-*, *-its-* (e. g. *ma-k-itc-tu'n* "my son," literally "the-my-little-son"); Yan. *-t́s-gi*, *-t́sɛ·-gi* diminutive plur. (also C. Yan. *'tcɛ-gi-* "to be small"); Was. *-tsi-* in *behɛ·-tsi-ŋ* "small."

92. old: *ax̣a*, *-aha*, *a·x̣-* in *sɛku·* *ax̣a* "muchacho grande," *na-x̣ka d-aha* "to grow" (literally "to go to maturity"), *a·x̣-mba* "old" (for *-mba* see no. 85), *m-a·x̣-* "more" (for *m-* see Morphology). Cf. Chim. *xawi-ni*, *hahawi-n-ta*" old"; Yan. *-a-* in *m-a'-tsk'i-* "feathers are old, worn out," *m-a'-tsk'i-lil-la* "buzzard" (for *m*-see Morphology); Chum. *x̣ax̣* "large."

93. raw: *ma·ca* "raw (meat)" (there must be some phonetic difference between this word and *ma·ca* "blue, green," no. 88, perhaps of tone, for Lehmann accents "raw" as *ma·́ cá*, but "green" as *ma·cá*; perhaps to be understood as *ma'ca*, cf. Yan. *-'su-i-*, Po. *t́as*, *ḱasi-*, *kis*, and Sal. *mat́se-* below). Originally "red"? Cf. Chum. *masomas* (red.) "red salmon"; Sal. *mat́seko'*, *matseko* "chipmunk"; *n.* Yan. *-ra-psi·-*, *-ra-psu-i-* "red" <**-da-msu-i-* (probably incorporated form in *-i-* of old nominalized form **da-msu* or **d-amsu*); Com. (*pa-*)*mso-l* "red"; Cot. *msa-ɛ* "red." Hokan **masu* (**ma'su*?) contains adjectival *m-* (see no. 123). Primary **-a*(')*su-* "red, raw" is found also in Yan. *-'su-i-* "raw, unboiled, unripe" (incorporated element, with lost initial vowel, in *-i-* in verb forms); Chum. *uks-* (misheard as *u's-* from **a'su-*?) in *uks-tai* "red"; Was. *dal-coco-ŋi* "red" (*dal-* is color-adjective prefix; *-coco-* reduplicated from *-co-* from **-asu-*, with *u* umlauted to *o* by preceding *a*?). With *t-* prefix also in Chum. *t-asu-n*, *t-ase-n* "red"; Po. *t-'as* "red" (from **t-a'su*?). With *k*-prefix in Po. *k-'is* "red"; *k-'asi-l*, *k-asi-l*, *x-asi-l* "redwood."

94. ripe: *nɛgo*, *nɛɛʒo* (this orthography points to *nɛ́'go*; <**ɛ'na-*?). Cf. Sal. *k-'nap*; Chim. *-m-ana-t* (read *-a'na-*?) "ripe" in *xo-manat* "unripe" (for *m-* see Morphology), but cf. *ho ·mat* "ripe." Hokan **i'na-*?

95. sick: *-ndi·yu* in *na-ndi·yu*. Cf. Yan. *m-a·di* "to be sick" (for *m-* see Morphology).

96. sour: *m-i·ka* (with *m-* prefix as in no. 86). Cf. Yan. *ḱai-* to be bitter; strong in taste"; Chim. *qoiyo-in* (read *ḱoyo-in*?) "sour." Hokan **iḱay*(*a*)?

97. sweet: *m-i·ta·u* (with *m-* prefix as in no. 86). Cf. Po. *-itau*, *-itu* in S. Po. *kodi-bitau* "sweet" (for *b-* prefix see Morphology), S. W. Po. *tuitu* (reduplicated with loss of *i-*, originally **itu-itu*; cf., for similar parallelism of forms, N. Po. *tcado-l* "round": E. Po. reduplicated *tcodotcodo-k*).

98. white: *m-i·ca* (with *m-* prefix as in no. 86; cf. *t-i·tcu·* "white," *-g-i·ca* in *di-gi·ca* "white hair"), Sq. *mica*, Ar. *mica*; Tlap. *mitca*. Cf. Moh. *nya-masa-m*, S. Catalina *imica-pa*, Kiliwi *umesa-p*; Ton. *mas-lak*; Cot. *meso-i*; perhaps also Es. *matshai-ba* "white people." Hokan **m-isa*?

99. yellow: *mox̣mo* (red.) "yellow," *-mu·x̣i·* "to paint" in *na-mu·x̣i·*. Cf. Yan. *-mu‘du-i-* "yellow" (incorporated element in *-i-*, cf. no. 93), probably derivative of *-mu‘-*, *-mux-*; perhaps also Sal. *k-umtica* "brown."

H. Numerals

100. one: *i·mba*, *imba*, Sq. *imba*, Ar. *imba*, Br. *imba* (from **ipa*? cf. nos. 8, 85). Cf. Yan. *bai-*; Es. *pek*; Chum. *paka*, *pake-t*; Ton. *pax*, *paxaa-tak* "alone, only"; Chim. *po-la* "alone" (*-la* is diminutive). Hokan **ipa*(*ki*)?

101. two: *a·pu·*, Sq. *apu*, Ar. *apu*, Br. *apu*. Cf. Kar. *axak*; Sh. *xokwa*, Ach. *haḱ*, Ats. *hoki*; Chim. *xoḱu*; Yan. *u‘-*, *ux-*; Po. *ako*, *ko*, *xotc*, *xos*; Moh. *havik*, Cocopa *howok*, Kiliwi *xuak*, Dieg. *xawok* (Hokan **-x̣wa-* becomes dissyllabic Yuman **xawa-*?); Sal. *xaki-c*, *kake-c*, *kak‘-cu*; Se. *k-uxo-m*, *k-axku-m*; Chon. *oke*; Es. *xulax* (with inserted *-l-* indicating plurality-duality or distribution?); Was. *heske*; Ton. *ake-tai*; Coa. *ax-te·*. These forms go back to Hokan **ax̣wa*, **ax̣waḱu* (**ax̣wasḱu*?).

102. three: *a·su·*, Sq. *asu*, Ar. *asu*, Br. *assu*. Cf. Sh. *xatski*, Ach. *t̀cacdi*; Chim. *xodai*; Was. *helmi-η* (with inserted *-l-*, cf. Es.); Po. *xom-ka*, *xoxa-t*, *kutc'a-ka*; Es. *xulep* (with inserted *-l-* as in no. 101); Moh. *hamo-k*; Se. *k-axpa-m*; Chon. *afa-n*; Sal. *kłapai*, *łapai*(*ł*). These forms are all based on Hokan **ax̣wa-* (cf. no. 101); for explanation of individual forms see note after no. 103.

103. four: *ax̣ku·*, Sq. *aku*, Ar. *axku*, Br. *asku*. Cf. Was. *hawa*; Es. *xama-x*; Chim. *qu·igu* (read *xu·i-gu*); Tonto *hoba*, Wal. *hoba*, Cochimi *hopa*, Yavapai *hopa*, S. Catalina *hopa*; Ach. *ha‘-da·ma*; perhaps also Sal. *k‘ica'* (from **x̣waxwa'* or **k-*(*a*)*x̣waxwa'*?). These forms too are based on Hokan **ax̣wa-* (cf. nos. 101, 102); for explanation of individual forms see following note.

NOTE TO NOS. 101-103. It is remarkable how much the Hokan numbers for 2, 3, and 4 resemble each other. The following table shows the parallelism at once:

	2	3	4
Chim.	*xok'u*	*xodai*	*xu·igu*
Sh.	*xokwa*	*xatski*	
Ach.	*hak̈*		*ha'da·ma*
Po.	*ako, ko, xo-*	*xoma, xoxat*	
Es.	*xulax*	*xulep*	*xamax-*
Moh.	*havik*	*hamok*	*hoba* (Wal.)
Sal.	*kakec, kak'cu*	*kłapai*	*k'ica'*
Was.	*heske*	*helmi-ŋ*	*hawa*
Se.	*-axku-*	*-axpa-*	
Chon.	*oke*	*afan*	
Sub.	*a·pu·*	*a·su·*	*ax̣ku·*

The resemblances are even closer than they appear to be; dialectic Pomo *ako, ko* (i. e. *ak'o, k'o*) goes back to *axo, xo*, Yuman *ho-* of *hoba, hopa* "four" is probably labialized from *ha-* because of following *-b-* (from *-w-* or *-xw-*, see below), and Washo *he-* and *ha-* are equivalent elements, *a* regularly changing to *e* when followed by *i* or *e*. There seems only one reasonable explanation for these curious parallelisms and that is to assume that they are due to etymological relationship. If "two" (Hokan **ax̣wa*, less probably **ux̣a*) be taken as starting point, "three" will have to be explained as "two plus" or "two and one," "four" as "two and two." A close analysis seems to bear out this hypothesis. At the same time the various ways in which the idea of "three" may be derived from "two" would account for both the radical resemblance and the tantalizing differences in the derivative suffixes of the Hokan words for "three." "Two" and "four," as might be expected, show much greater conformity to Hokan prototypes. The following table attempts to group the forms on the basis of original structure.

2. (a) Radical element, Hokan **ax̣wa*:
    - Yan. *uʻ-, ux-*
    - Po. *ako, ko*
    - Moh. *havi-k*, Cocopa *howo-k*, Kiliwi *xua-k*, Dieg. *xawo-k* (with adjectival *-k* as in Dieg. *miyul-k* "sweet"?)
    - Chon. *oke*

   (b) Hokan **ax̣wa-k̈u*:
    - Kar. *axa-k*
    - Sh. *xo-kwa*, Ach. *ha-k̈*, Ats. *ho-ki*
    - Chim. *xo-k'u*
    - Sal. *xa-ki-c, ka-ke-c* (perhaps to be understood as *k-xak̈i-c*, Hokan **k-ax̣wák̈u-*, cf. Seri)
    - Se. *k-ax-ku-m* (for intransitive *k-* and suffixed *-m* cf. Se. forms for "three")

   (c) With inserted plural *-l-* (cf. frequent use of infixed *-l-* in Sal.), **ax̣wala-* or **ax̣ula-*:
    - Es. *xula-x*

   (d) With *-s-* suffix, **ax̣wa-s-*:
    - Po. *xo-s, xo-tc*
    - Was. *he-s-ke*

(e) With other elements of less wide distribution:
Ton. _ake-tai_; Coa. _ax-te·_
Sub. _a·-pu·_ (from *_ax̣wa-pa-k_?)

3. (a) Hokan *_ax̣wa-sa-_ or *_ax̣wa-ṫsa-_ (often with _-k-_ suffix):
Sh. _xa-ts-ki_, Ach. _ṫca-c-di_ (perhaps *_x̣wa-ṫs-_ shifted to *_xwa-ṫs-_, whence, with sibilant development of _x_, _xw_ characteristic of Shasta-Achomawi and with glottal metathesis, *_ṫsa-ṫs-_, *_ṫsa-s-_)
N. E. Po. _ku-tc'a-ka_, S. E. Po. _xo-xa-t_ (from *_x̣wa-sa-_ or *_x̣wa-s'a-_; Pomo _s_, _c_ generally appears as _x_ in S. E. Po., e. g. _xama-_ "ear," but _cima_ in other dialects)
Sub. _a·-su·_ (from *_ax̣wa-sa-k_, see Phonology)
(b) With element *_-ma-_ "together with, added to" (see no. 114; cf. Yana numerals like _bai-ma-mi-_ "six," literally "one-with [five]-aside"), *_ax̣wa-ma-_ "two-plus":
E. Po. _xo-m-ka_ (_-ka_ as in _kutc'a-ka_ "three")
Moh. _ha-mo-k_ (_k-_ as in _havi-k_ "two")
(c) With suffixed *_-pa_, perhaps identical with *_ipa_ "one" (see no. 100), *_ax̣wa-pa-_ "two-one":
Se. _k-axpa-m_
Chon. _afa-n_ (from *_ax^{u}pa-_?)
(d) With plural _-l-_ inserted in type b or c, *_ax̣wa-l-ma-_, *_ax̣ula-pai-_ (based on *_ax̣wa-pai-_ "two-one"):
Es. _xulc-p_ umlauted from contracted form *_xula-pi_?)
Sal. _kła-pai_, _lapai-_ (from *_x̣^{u}la-pai-_; perhaps to be understood as _k-xla-pai_, Hokan *_k-ax̣ulá-pai-_; note that Esselen and Salinan forms go back to identical prototype)
Was. _he-l-mi-η_ (from *_ax̣wa-l-mi-_)
(e) Hokan *_ax̣wa-ta-_:
Chim. _xo-dai_ (cf. also Ach. _ṫca-c-di_?)

4. (a) Hokan *_ax̣wa-x̣wa_ "two-two," generally disguised by secondary processes:
Was. _ha-wa_ (dissimilated from *_ax̣wax̣wa_ to *_ax̣wawa_)
Ach. _ha-ʻ-_ in _haʻ-da·ma_ (from *_ax̣wax̣^{u}-_, *_x̣wax̣^{u}-_)
Sub. _a'xḳu·_ (from *_a'x̣wagwa-k_<*_a'x̣wawa-k_, cf. Washo; see Phonology; note Sub. _a·-_ in "two" and "three" from *_ax̣wa'-_, but _a'x̣-_ in "four" from *_a'x̣wa-_)
Yuman _hoba_, _hopa_ (probably dissimilated from *_ax̣wa-x̣wa_, perhaps through *_ax̣wa-wa_, cf. Was. and Sub.)
Sal. _kʻica'_ (from *_ax̣wa-xwa-_, dissimilated from *_ax̣wa-x̣wa-_, with Hokan _x'xw_ shifted to _c_, as regularly, and _-a-_ palatalized to _-i-_ before _c_; perhaps to be undertood as _k-xica'_, Hokan *_k-ax̣wá-x̣wa-_)
(b) With element *_-ma-_ (cf. type b of "three"), *_ax̣wa-ma-_ "two-together, set of twos":
Es. _xa-ma-x-_
(c) With dual *_-u·_, *_-u·-wi_, *_ax̣wa-ku·_(_-wi_) (see type b of "two"):
Chim. _xu·igu_ (read _xu·kuw^i_?) (this formation would be entirely parallel to Yan. _lal-u·wi_ "two feet"; Chum. _cku·m-u_ "four, two twos," cf. _icko·m_ "two")

I. Demonstrative, Interrogative and other Pronominal Stems

104. this: *-la* in *ka·-la*, *x̣a-la* "this one," *-la* "this" (e. g. *gwa-ya-la* "this house of yours"), Sq. *ka-la* "this," *endo-la* "this day, today." Cf. Chum. *al-*, *ala-* article (e. g. *al-apa* "sky," *ala-xüwül* "coyote"); Es. *la-* of *la-l* "he"; perhaps Sal. *-la*, *-l-*, *-ł* of *he-ł*, *i-l·a*, *i-l-ta* "soon, afterwards"; probably Chon. *l-*, *ka-l*, *al-* noun prefix (e. g. *l-ahutl* "house," *ka-l-ora* "sun," *al-fo·na* "sun"). Here belongs also Sub. *-lu·* (see no. 122).

105. this, that: *ta-* demonstrative stem in Ar. *ta-ka* "celui-ci, celui," *ta-lu* "celui-là." Cf. Yan. *da*, *-da-i-*, *a-dai-*, *a-dai-ri* "that"; Po. *te·-* in *te·-ya* "those people"; Chum. *i-te*, *tu-yu* "this"; Se. *i-ta-m* "he, that"; Kar. *ta* adverbial particle preposed to verb forms indicating "probably indefinite or imperfect time"; Was. *da-*, *de-* "his," *d-i-* "him-I" (in verb forms), adverbial particle *da*, *-da* (e. g. *ic-da* "and then," *i-da* "thereupon"); Sal. demonstrative particle *-ta*, *ta-* (e. g. *i-l-ta* "soon," *na·-ta·*, *ta-na*, *ta-ha*, *ta·* "now"); Ton. *te-l*, *ta-ka*, *wa-ta-c* "that, this"; Coa. *ta* "that, the"; Karan. *ta-l* "that, he." Related to Hokan **ta* "that" is probably *t-*, nominalizing prefix (see no. 120).

106. that, he: *ka·-* in *ka·-la* "this one," *ka·-gi* "eso," *ka·-gi-nu* "esos," *-ka* (*-ŋga*) in *i-k̓a*, *i-ŋga* "he," Sq. *ka-* in *ka-la* "this," *ka-gi* "that"; perhaps also *ga-* verb prefix indicating futurity. Cf. Ton. *-ka* in *ta-ka* "that, this"; Chum. *ka-*, *qo-* in *ka-i*, *ka-ki* "this," *qo-lo* "that"; Chon. *ka-l-* noun prefix.

107. that (past): *di·-*, *di-* in *di·-ci·i* "yesterday" (literally, "that [past] day," cf. no. 33), Sq. *di-ci*, Ar. *di·-ci*. Cf. Was. *di·* "there (distant)," *di·-di* "that (distant)." Perhaps related to no. 105.

107a. this: *i-* general demonstrative stem of nearness: *i-ŋga*, *i-'ka* "he," *i-ku·* "I," *i-ka* "thou" (note that "I" and "thou" are based on general third personal *i-ka*, see no. 106, as Yan. *ai-'nidja* "I" and *ai-'numa* "thou" are based on *ai* "he, the"), *ϵ-n*^{y}*u·* "they" (from **i-mak*, see Phonology; *-in*^{y}*u·*, *-n*^{y}*u·* used as personal plural), *i-ŋgi·* "near" (based on *i-ŋga* "he, it," perhaps from **i-ka-t* "this-at"), *n*^{y}*a* "and" (from **i-má* "this-with," see Phonology), *ϵ-ndo* "today" <**i-nwa* "this-day" (see no. 31 and Phonology); perhaps also in *gi·-* "on, in, at" (see no. 113) which may be verbified *g-i·* "to be at (this)." Cf. Kar. *-i-pa* "this," *-i-k*^{y}*u* "that" (see no. 108); Sal. *i-l·a*, *i-l-ta* "soon," *i·-n* "yet, still"; Chum. *i-te* "this," *i-two* "that"; Was. demonstrative stem *i-* in *i-c* "then," *i-da* "thereupon," *i-ŋa* "because, although" (originally "this-with," see no. 114); Se. *i-ta-m* "he, that"; perhaps also Yan. *-i* of *dj-i* "the" (used before first person singular and plural possessive forms; contrast *dj-u* for second personal forms).

107b. here: *nana*, Ar. *-nu*, *-na* of *aya-nu* "ici, par ici," *aya-na* "viens ici" (for *aya-* see no. 69); probably also verb prefix *na-* present tense (originally demonstrative adverb "now"?). Cf. Sal. *na*, *n̓ona* "this, these," *na-ye*, *ṭo-na-i* "here," *na·-ta·* "now," *ta-na* "now," *no*ʽ, *non*, *no·no*ʽ "soon, some time, now"; Chum. *-na* in *kiɛ·-na* "this" (animate); Yan. *na-* "that it is" (see *Yan.*, no. 95). Perhaps related to absolutive *-*na* of nouns (Kar. *-r*, *-ra*; Yan. *-na*; Es. *-no*, *-na-x*, *-ne-x*), see Morphology.

108. yonder: *ba·-* in *ba·-ri* "there, allá." Cf. Kar. *pa* demonstrative pronoun of reference, *pa-ipa* "this," *pa-ik*^{v}*u* "that"; Chim. *pa·-mut*, *pa·-ut* "that"; E. Po. *ba* "that, the," *u-ba*, *me-ba* "that"; Sal. *pe* "that, the, those," *pa* "that, those," *pa* "there, here," *ne-pa*, *ne-pe* "there, here"; Yan. *bɛ·-* "(it is) so and so which, who."

109. what?: *ma·-* in *ma·-na* "what?", *mu·-*, *-mu·* (from **ma-k*? see Phonology) in *mu·-nạ* "what?", *nu-mu·* "where?", *-mbi·* in *a-mbi·* 'when?" (or *m*: *mb* see Phonology), *-mba* in *mi-mba* "how much?" Cf. E. Po. *am* "who? what?"; Yan. *'am-bi-* "who?"; Chim. *qo-ma-s* "who?" (*qo* is used as general interrogative stem); Sal. *ma-s* "somebody, someone"; Yuman *ma-* (e. g. Moh. *ma-ki* "where?", Dieg. *mai-ve* "where?").

110. where?: *a·la* "where? whence? whither?" Cf. Ton. *ala* "where?" Coa. *anu*, *ani*.

111. all, many: *ba·-*, *ba-* in *ba·-na* "all," *baa* "enough," *ba·-n*^{v}*u* "many." Cf. Yan. *-ba-* suffix in verb forms "all, several," *-ba-nau-ma* "everybody."

112. my: *-u·* (after consonants), *-yu·* (after vowels), from **-a-k*, **-ya-k* (see Phonology), *i-ku·* "I" from **i-ka-k*; Tlap. *r-utu·* "my mother" <**-uta-k* (cf. *r-uta-lo* "our mother"), *ano* "my father" <**ana-k* (cf. *ana-lo* "our father"). Sub. **-k* is also used as objective "me," e. g. *-lu·* <**-la-k* imperative particle + "me" (see no. 126). Cf. Chon. *ka-*, *ki-* "I" (incorporated); Po. *ke* "my"; Sal. *k*ʽ*e*', *he·'-k*, *ke-k* "I," *-ak* objective "me" in verb forms; Chum. *k-* "I; my"; Ton. *ka* "me."

J. Particles

113. at: *gi·-* "on, in, at" (e. g. *gi·-di·yalu·* "in the water"), *gi·-* "toward, from" (e. g. *gi·-n*^{v}*ax̣u·* "from work"). This general locative particle is also compounded in *gi·-tca* "behind, back of," *gi·-tcu* "upon, over." Cf. Yan. *gi* general locative and objective particle before nouns; Sal. *ke*, *k-* locative element before pronominal suffixes (*k-'e* "to me," *ke-o* "to him," *k-'a* "to us," *k-o* "to you pl.," *ke-wał* "to them").

114. with: *ma*, generally as postposition (e. g. *iku·-ma* "with me"), sometimes preposed, *ma·-ni* "with, by means of"; also *nʸa* "and" (from **i-ma*, see no. 107a), plur. *-i-nu·*, *-i-nʸu·*, *-nʸu·* <**-i-ma-k* "being with this," *ɛnʸu·* "they" (from **í'mak*). This element (*ma-*, *m-*) is frequently used as verbal prefix in subordinate clauses of purpose (e. g. *ma-nʸa* "for drinking," literally "with-drink," *m-iu* "for eating"); also as indirective, locative, or connective suffix in verbs (e. g. *ni·-cna-ma* "gave," *na·-data-ma* "we speak," *iku· na-da·tco·-ma ika* "I listen to you," *na-dia-ma d-a·gu·-lu·* "to put with fire, to burn," *na-cka-ma* "to reach," *iku· na-tca·-ma* "I come," *na-stox-ma* "to bind"). Cf. Yan. *-ma-* verb suffix "together with," *-ma-*, *-m-* indirective "to" (with first and second person object and in passive forms), *-m-t́si-*, *-mi-t́si-*, "with one another"; Chim. *-m-* in *-m-di*, *m-du* instrumental postposition; Kar. *-mu-k* nominal postposition "with"; Po. *-ma* verb suffix expressing plurality of subject, *-ma* "each other," *-ma-k* nominal postposition "in company with," *-mak* verb suffix "to be provided with"; Es. *-ma-nu* "together with" (cf. *-nu* "by means of"); Was. *-ŋa-* in *-ŋa-wa* "more, besides," also *-ŋa*, *i-ŋa* "because, although," *ic-ŋa* "but"; verbalized in Sal. *k-amau* "to be together, join." Hokan indirective **-m(a)* seems to be found also in Po. *dika-m*, *daka-m* "to give": *diaxa*, *di'ka*, *di'kau*; Sal. *omia-m* "to meet," *p-aye-m* "to carry" (no. 58a).

115. in: *wanʸ*, *waŋ-* "in, inside, into" (e. g. *waŋ-gwa·-yu·* "in-house-my"), *na-waŋ-no* "stomach." Cf. Yan. *-wul-* "into" (as verb suffix), *i-wu·lu* "inside"; Kar. *-furu-k* "into the house" (verb suffix); Ach. *-lu* "into the house" (verb suffix; from **-xlu*?); Chim. *-xun* "into" (verb suffix), absolute *xuno-i* "into." Hokan **x̣wulu* from **x̣walu* (**x̣-walu*)? Cf. also Penutian **wani*: Takelma *-wini-* in *ha'-wini-dɛ·* "in-interior-my, inside of me"; Wishram (Chinookan) *-wan* "belly, womb"; Tsimshian *wun-*, Nass River *hwɩn-* "innermost part."

116. a little: *ax̣-* in *ax̣-kwi·* "a little" (from **ax̣u-*?), *-x̣o*, *-x̣u·* in *gwa-x̣o*, *wa·-x̣u·* "a little, something." See also no. 54? Cf. Chim. *-gu*, *-ku* "somewhat, a little" (e. g. *xani·-gu* "by and by," *patce-am-ku* "something"), *-gu-la-n* "merely, only"; Yan. *-gu-* verb suffix "a little, just." This element (**ax̣u-*, **-ku*) is probably closely connected with:

117. not: *a·-* (from **ax̣wá*, see Phonology) as prefixed element, also as enclitic *a* (e. g. *su·lu· á* "someone not, nobody"). Cf. Hokan **k'u*, **ku* (also **x̣u*?): Yan. *k'u-* "to be not," *k'u* "not"; Chim. *xu-* "not," *x-* negative verbal prefix, *-gu-*, *-ku* negative suffix (e. g. *patci-gu-n* "no," *amaidatci-ku* nowhere"), *-c-ku-t*, *-c-ku-n* "without"; Po. *ku-yi*, *ku-i*

"no, not"; Sal. *ko-*, *k-* negative prefix; Coa. *ox*, *oxua* "not"; Karan. *ko-m*, *kwoo-m* "no, not." Presumably Hokan *(*a*)*x̣u-*, *(*a*)*k'u* of nos. 116 and 117 was proper to accented forms, *-*ku* (with intermediate *k-g*) to unaccented or enclitic forms.

118. now, already: *ci·* (e. g. *ci·-naa* "now," *ci· wax̣i·* "it is late already"), also *ci·-*, *ci·-ni-* "already" as perfective prefix. Cf. Po. *co* "now"; Ton. *huc*; Karan. *aca-hak*; possibly also Yan. *-si* present indicative verb suffix (originally "now"? This etymology is by no means as far-fetched as it seems, as there can be little doubt that Yana tense-modal suffixes are nothing but petrified stems which were originally independent, e. g. quotative *-t'i*: verb stem *t'i·-* "to say").

119. past time: *ni-*, used as verb prefix or, better, proclitic particle to express past time. Cf. Yan. *-'ni-* preterit verb suffix (-'- probably shows that *-ni-* was originally felt as enclitic particle disconnected from verb form proper; cf. *-'ni-dja* "I," *-'nu-ma* "thou" for original *-ni-dja*, cf. *-n-dja* "I," and *-nu-ma*); Po. *-ne*, *-ni* apparentative verb suffix ("must have"). Hokan **ni* probably old particle verb: "it was, it happened."

K. Grammatical Elements[8]

120. Sub. d- absolutive noun prefix of frequent use (see Morphology). This element is probably petrified from demonstrative **ta-* (see no. 105), but it is possible that it already occurred as nominal prefix (**t-*) in early Hokan and did not merely develop independently in several dialects. Cf. Sal. *t-*, *ṭ-* article prefix of many nouns, also frequently used to nominalize verbs into subordinate clauses; Chum. (San Luis Obispo dialect) *t-* article prefix of many nouns (e. g. *t-axa* "bow": *ax* of other dialects), but probably also as survival in other dialects (e. g. *t-em*" leg, foot": Chon. *imits*; Moh. *ime*; Com. *emi*); Was. *d-* common nominal prefix (e. g. *d-aŋa-l* "house": *aŋal* "to dwell"), probably also in *d-i·-* "my" (cf. Sal. *ṭ-m-* "thy," Sub. *d- . . . -u·* "my"); Sh. *t-*, *d-* perhaps in certain survivals (see no. 24), further Ach. *d-* in *d-isoq* "urine" (: Sh.

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[8] There is, of course, no real line of division between grammatical elements and proclitic or enclitic particles. I have here listed such elements as seem more definitely grammatical in character. Some of them, like intransitive *g-* and adjectival *m-*, evidently belong to a far older stratum of the language than such proclitic particles as *ni-* (no. 119), *ci·-* (no. 118), or *na-* (no. 107 b).

icukwi, Ats. *wissuq*; Was. *d-a·ca* "urine," *aca* "to urinate"; Chum. *oxco-t* "urine"); Po. *d-* apparently in certain nouns (e. g. *d-ano*, *d-ono* "mountain": S. E. *k-ano*, *k-no*, see no. 41; *d-axo*, *d-ako*, *d-aγo-n*, *d-oko*, *d-uku-l*, *t-uku-n* "pestle": S. E. *s-ku-n*; *d-iwe*, *d-uwe* "night": *i'we*, *iwe*; *d-apo* "fog": *pot*; *d-iwi*, *d-owi*, *d-uwi* "coyote": *i'wi*). For Hokan noun prefixes, see Morphology.

120a. Sub. *r-*, *ɼ-* absolutive noun prefix (see Morphology); Tlap. *r-* in *ɼ-utu·* "my mother" (properly "the-mother-my"). Cf. Sal. *l-* absolutive noun prefix; Chum. *a-l-*; Chon. *l-*, *t-l-*, *ka-l-*, *ha-l-*. See also nos. 104, 122. For adjectival *r-* in Sub. see Morphology.

120b. Sub. *s-*, *c-* absolutive noun prefix (see Morphology). Cf. Sal. *s-*, *c-* absolutive noun prefix; Chum. *s-*, *tc-*; Yuman *s-*. See also no. 123a.

120c. Sub. *p-* absolutive noun prefix (see Morphology). Cf. Sal. *p-* absolutive noun prefix; Po. *b-*.

120d. Sub. *k-* absolutive noun prefix (see Morphology). Cf. Po. *k-* absolutive noun prefix; Sal. *k-*; Yuman *k-*.

121. Sub. *d-* adjectival prefix (e. g. *d-a·gu* "big"), perhaps identical with no. 120. Cf. Was. *t-*, *d-* (e. g. *t-aŋau*, *d-aŋau* "good": *aŋau* "to be good"); Yan. *da-* in adjective verbs; Po. *d-*, *t-* (e. g. N. E. *t-uya* "small": S. *-uya* in *baiya-uya* "man-small, boy"); Sal. *t-*, *ṭ-* (e.g. *t-elwa-ne* "strong, fierce": *lu·wa'* "male, man"; *ṭ'-xauwat* "yellow": *s-xauwit'* "acorn"); Chum. *t-* (e. g. *t-asu-n* "red," see no. 93). This element is discussed below.

122. Sub. *-lu·* common noun suffix (e. g. *d-i·ya-lu·* "water": *i·ya* "water," *i·la-lu·* "island" borrowed from Spanish *isla*), probably related to demonstrative *-la* (see no. 104; *-lu·* perhaps from **-la-k*, see Phonology); Tlap. *-lo* (*e.g.* *ɼ-uta-lo* "thy mother": Sub. *d-u·ta-lu·*). Cf. Chim. *-r*, *-l* noun suffix (e. g. *tcima-r* "man," *piso-l* "quail"), *-ra*, *-la* (e. g. *pxici-ra* "skunk"; diminutive *-l-la* is dim. *-l-*+absolutive *-la*); Po. *-l* absolute noun suffix (e. g. *fo-l*, *po-l* "beads": *fo*, *po*; *cala-l* "liver": *cala*; *mitci-l* "day": *matci*; *yu-l*, *hu-l* "snow": *yu*, *i'yu*; *k-asi-l*, *k-'asi-l*, *x-asi-l* "redwood": *k-'is*, *t-'as* "red," see no. 93; *buraka-l*, *beteka-l* "bear": *butaka*), also *-n* (e. g. *kasi-n* "redwood," *tuku-n* "pestle": *duku-l*, *dako*); Dieg. *-l*^{y}, *-ll* (e. g. *'emi-l*^{y} "leg, foot": Moh. *'ime*; *apa-ll* "arrow": Moh. *ipa*); Was. *-l* (e. g. *d-aŋa-l* "house," *ts-iga-l* "kidney," *ts-ime-l* "beard"); Es. *-l* (in *la-l* "he," *make-l* "rat," *kumu-l* "quail," *halaka-l* "mussels," *kalu-l* "fish": Yan. *gala·*, *kume-l* "knife"), *-la* (e. g. *imi-la* "sea," *maksa-la* "earth": *matra*); Ton. *-l* in *te-l* "that, this"; Karan. *-l* in *ta-l* "that, he."

123. Sub. *m-* adjective prefix (e. g. *m-a·ca* "blue, green": *d-aca-lu·* "grass"). Cf. Yan. *m̥-* (e. g. *m-a·si-* "to be ripe": in-

corporated *-si-*); Po. *m-* (e. g. *m-ato* "large": *b-ate*); Yuman *m-* (e. g. Dieg. *m-iyul-k* "sweet": Sal. *k-esiyu-'k* "sweet"); Sal. *m-* (e. g. *m-aṭ'al* "white"). This archaic element is discussed below.

123a. Sub. *s-*, *c-* adjective prefix (see Morphology). Cf. Sal. *s-* adjective prefix. This element is probably identical with no. 120b.

124. Sub. *g-* intransitive verb prefix (e. g. *-g-i·ma* "to ascend": *d-ehma-lu* "sky"). Cf. Sal. *k-* prefix for static verbs and adjectives (e. g. *k-axk'o'* "to be careful," *k-alep* "to forget," *k-itcmila* "transparent"), alternating with active *p-*; Se. *k-* adjective and numeral prefix (e. g. *k-opoł* "black," *k-akoł* "great," *k-uxo-m* "two"); Po. *k-* prefix for intransitive verbs and adjectives (e. g. *k-amale* "angry," *k-itci-du* "small": *b-itcu*); Chum. *k-* (e. g. *k-opo-k* "dead": Chim. *-po-* "to sleep"); Ton. *k-* (e. g. *k-opol* "round": *pilil* "round"); Cot. *k-* (e. g. *k-ɛnas* "good": Ton. *hinax*, see no. 87). This important and evidently archaic Hokan element is discussed below.

125. Sub. *d-* transitive verb prefix (e. g. *-d-ia-ma* "to make go with, to place"). Cf. Was. *d-* (e. g. *d-amal* "to hear," originally "to make, give ear," see no. 7). This element is discussed at greater length below.

126. Sub. *-la*, *-l* imperative particle, *-lu·* <**-la-k* imperative with first person singular object (e. g. *da-cna-lu·*, *da-cna-l iku·*, *da-cnu·-la* "give me!") Cf. Es. *-la* imperative particle (e. g. *es-la hasa-na*[*x*] "bring water!" *iuk-la asa-nax* "give me water!" *absku-la* "look!")

II. NOTES ON SUBTIABA PHONOLOGY

It is not my purpose to discuss Subtiaba phonetics in any detail, nor would Dr. Lehmann's somewhat inadequate orthography make it possible to do so in any event. A few indications of probable or possible phonetic developments should be of some service, however, in elucidating the lexical comparisons that I have suggested. The phonetic character of Subtiaba seems not dissimilar in some respects to that of Mixtec-Zapotec-Otomi (cf. such syllables as *mba* and *n*^{v}*aų*) and it would not be at all surprising if this Hokan language, the neighbor of languages of the Mixtec-Zapotec-Otomi group both in Mexico and in Nicaragua (Mixtec, Trique, Mazatec, Mangue-Chorotega), had been somewhat influenced by them in its sound system.

Vocalic Changes. There is evidence to indicate that *a* is umlauted in many cases to ϵ (or _e_) by following or originally preceding _i_. Examples of _a_ umlauted to ϵ by following _i_ are:

ϵϵdi·, ϵ'di "blood" <*_a·'ti_ <*_axwa'ti_ (no. 3)
ϵmbi "owl" <*_ambi_ (no. 64)

Examples of _a_ umlauted to ϵ by an unaccented preceding _i_ which has disappeared (see below) are:

_me-_ "camisa" <*_ima-_? (no. 52)
_sϵ-ku·_ "child" <*_isa-k'u_ (no. 54)
_sϵ-ka_ "sister" <*_isa_ (no. 56)
nϵ-go, nϵϵ-go "ripe" <*_i'na_ (no. 94)
_mϵ-nu·_ "nine" <*_imba-nak_ "one-missing"? (cf. no. 100); that _mϵ-_ is derived from _imba-_ and not from *_ima_ seems to be indicated by _n_^{y}_a_ from *_ima_ (see below)

In another series of examples original _i_ has been modified to ϵ (or _e_) by a following _a_, either preserved, lost or itself contracted with following _-k_ to _-u·_ (see below):

ϵtcu· "head" <*_is(a)nu_? (no. 14)
_ϵn_^{y}_u·_ "woodpecker" <*_inak_ (no. 29)
eme "camisa" <*_ima_? (no. 52)
d-ehma "en haut" <*_i'ma_ (no. 44)
_ϵn_^{y}_u·_ "they" <*_imak_ (no. 107a; see also no. 114)
ϵndo "today" <*_i-nwa_ (no. 31)

In _me-_, _eme_ "camisa" from *_ima_ (see No. 52) both vowels appear to have modified each other; but it is rather probable that *_ami_ (or *_imi_) should be assumed for Sub., as *_ima_ would have resulted in _n_^{y}_a_ (see below). In _ϵń_^{y}_u·_ "they" and plural suffix _-(i)n_^{y}_u·_ we appear to have a doublet (ϵ́-: _-i-_) dependent on differences of stress. It seems likely that all examples of Sub. ϵ go back to _i_-umlaut of _a_ or _a_-umlaut of _i_.

Somewhat analogously, _a_ seems to have become rounded to open _o_ or to ω (Lehmann's _å_) by following _w_ in:

goo "his house" (from *_gwoo_ <*_gwa-wa_? cf. _gwa_ "house")
ω·s'nko· "lizard" <*_aswa-'n-k̓a-_ (no.27)

Postconsonantal _wa_ also became _o_:

ϵndo "today" <*_i-nwa_ (no. 31)

Here belongs apparently also _kwa_ > _ku·_ :

_ku̧·i_ "to come" <*_k'wani_, *_k'wali_ (no. 63)

Monophthongization of Diphthongs. The diphthong *au* seems to have often become monophthongized to *u·* or *o* and we find variants of *au:u·*, *o*. Examples are:

-mpa·u "big, fat": *ombo* (based on *umba*, *-mba*); see no. 85
mi·na·´u "alone": *mi·´no*

As the last example shows, the difference between diphthong and simple vowel is probably due to differences of stress. These examples help to explain a series of alternating forms in *-a* and *-o* (or *-u·*), in which a suffix *-w* or *-u* seems to have combined with the final *-a* of the stem:

-d-apa: *-g-apo*, *-g-apu·* "to sleep" (no. 80)
na-cka-ma "to reach": *iku· ni-cka-mo* "seized me"
na-dia-ma "to place at": *na-x̣ka ga-dia-mo aku·* "to go to make fire"
iku· na-cna "I give (you)": *iku· na-cno* "I give him"
na-data, *na·-ata* "to say": *ika iku· na-to* "you say to me"

We are therefore prepared to find examples of Sub. *-u·* <Hokan *-au*:

d-asu· "fat" <**axau* (no. 11)
-gu· "to sleep" <**kau* (no. 81)

For *-u·* from *-au* <*-ak*, see below.

Parallel to *au*>*u·*, *o* is *ai*>*i·*. An example from Subtiaba itself is:

yi·tu "tear" <**ya-i'tu* (no. 9)

Final *-i·*, *-i* probably goes back to Hokan *-ai* in:

i·ci "tree" <**ixai* (no. 47)
d-ici·-lu· "bow" <**ixai* (no. 49)

For *-i·* from *-ai* <*-at*, see below.

Change of w *to* gw. There is clear evidence in Subtiaba of an interchange between initial or intervocalic *w* and *gw* and of *ηw* and *ηgw*. As final *-w* unites with preceding *a* to form *-au* or *-o*, we may have an interchange between final *-au* (or-*o*) and medial *-agw-*· (*-akw-*). Examples are:

aηwa "mountain": *aηgwa* (no. 41)
d-a·wa "there is not": *d-a·gwa* (no. 70a)
na-ga·wi· "to flee," *na-ga·u* "to go": *na-ga·gwi·* (no. 70)
a·-na-wano "you are not silent": *na-gwano* "quedarse callado"
wax̣u·: *gwax̣o* "a little"

wax̣i· "late": _gwax̣i· dimba si·gu·_ "one year late"
_d-a·ų, d-ą·ų·_ "mouth" (<_d-ąw, d-aŋw_): _d-aŋgwa_ (no. 16); cf. also _na-ŋgwa-x̣a_ "to yawn"
_yu·a_ "cabuya" (read _yuwa_): Tlap. _yugua_ "maguey" (read _yugwa_)
_-to_ "to say" (from _-ta-w_, see above): _ni·-takw i·ku·_ "I said," _ni·-takw i·ka_ "you said" (from _-taw i·-_)

The last example and such cognates as _aŋwa_ "mountain": Chim. _awu_ (_a·ma_), _d-a·wa_ "there is not": Sal. _k-awa_ "to be lacking," _-g-a·u_ "to go": Hokan *_awa_, and _d-a·ų_ (_d-aŋgwa_) "mouth": Chim. _h-awa_ suggest strongly that _w_ is the original consonant and that _g_ arose parasitically before it. In the following examples original _w_ appears regularly as _gw_ (_g_, _k_ before _-u·_):

gwa "house" <Hokan *(_i_)_wa_, *(_a_)_wa_ (no. 50); but Ar. writes also _iwā_
_a·gu·_ "fire" <_agwu·_ <*_agwa-k_ (see below) <Hokan *'_awa-_ (no. 36)
_ax̣ku·_ "four" <_ax̣_^{u}_gwu·_ <*_ax̣wagwa-k_ (see below) <*_ax̣wawa-k_ (no. 103)

Vocalization of Final -ak _and_ -at. Subtiaba seems to tolerate no final consonants. As unaccented vowels frequently disappeared (see below), this can only mean that the final consonant which remained when an originally following unaccented vowel was lost united to form a diphthong or long vowel with the preceding vowel. There is not enough evidence available to work out all the phonetic developments that must have taken place, but it is rather clear that _-ak_ became _-u·_ (_or -o·_) no doubt via _-au_. We may gather this from comparative evidence, from alternations within Subtiaba of forms in _-a_ and _-u·_ (i. e. _-a-_ + a lost consonant), and from at least one luckily preserved alternation of _-u·_ : _-ag-_. Examples are:

_i·su·_ "bone" <*_ix̂ak_, *_ihyak_ (no. 4)
_ɛn_^{y}_u·_ "woodpecker" <*_inak_ (no. 29)
ω·s'nǩo· "lizard" <*_aswa'nǩak_ (no. 27)
_m-i·du·u·_ (read _mi·du·_^{u}?) "night" <*_itako_ (no. 42); cf. Coah. _tako·-m_ "night" and Sub. (Sq.) _m-idagi-na_ "black"
t-i·tcu· "white" <*_t-i·ca-k_ (no. 98); cf. Sub. _m-i·ca_ "white"
_mu·-, -mu·_ "what?" <*_ma-k_; cf. Sub. _ma·-_ (no. 109)
_-ga-n_^{y}_u·_ "to die" <*_-g-imak_ or *_-g-imax_(_w_) (no. 65)
_ra·bu_ "person, man" <*_ra·ba-k_ (no. 54a): _ra·ba-gu·_ "woman," literally "person-female"
_-lu·_ "the" <*_-la-k_ (no. 122); cf. Sub. demonstrative stem _-la_ "this"

-lu· imperative particle+"me"<*-*la-k* (no. 126): Es. *-la* imperative particle; Sub. *-la*, *-l*
a·gu· "fire<*'*awa-k* (no. 36)
uku· "moon"<**axawa-k*? (no. 40)
ϵ-n^y*u·* "they," plur. suffix -(*i*)-*n*^{y}*u·*<**i-ma-k* (no. 114); cf. Po. *-ma-k* "in company with"
-u· "my," Tlap. *-o* <*-*a-k*(*i*) (no. 112)
-u· numeral ending in *a·pu·* "two" (no. 101), *a·su·* "three" (no. 102), *axku·* "four" (no. 104), *wi·su·* "five," *ma·xu·* "six," *kinu·* "seven," and *mϵnu·* "nine" <*-*a-k*; cf. Yuman numerals of type Moh. *havi-k* "two," *hamo-k* "three"

The group *-alk* appears as *-aų*, in other words the *-l-* became *n* and was absorbed as nasalization in *-au*<*-ak*:

n^y*aų* "ear"<**ismalk* (no. 7)

It is reasonable to suppose that original *-at* was similarly vocalized to *-ai*, *-i·*. Several examples seem to support this view:

i·x̂ki· "olosica"<**ixkat* (no. 26); cf. Sal. *i-l-kat* "ant"
ambi· "when?"<**a-ma-t* "what-at?" (no. 109)
iŋgi· "near"<**i-ŋga-t* "this-at"? (see no. 107a)
ga-mi·, *ga·-mi* "with, together"<**ga-ma-t* "that-together-at"? (see no. 114); cf. Sub. *ma* "with")

Palatalizing of Nasals. One of the characteristic features of Subtiaba phonetics is the frequency of the anterior palatal nasal, *n*^{y} (Lehmann's *ñ*). It is highly probable that this sound originates often and perhaps always, from *i*+ following nasal (*n*, *m*); *im* first became palatalized to *im*^{y}, which then fell together with *in*^{y} from original *in*. Before *a* unaccented *in*^{y} seems regularly to have simplified to *n*^{y}, which may therefore be considered as nasal (*n*, *m*) with inherent *i*-vowel. Before *u*, however, *in*^{y} sometimes assimilates to *un*^{y}. Examples are:

ϵn^y*u·* "woodpecker" <**inak* (no. 29)
n^y*a·u·* "hand"<**inaw-* (no. 13)
n^y*a* "and"<**i-ma* "this-with" (no. 114); cf. Was. *i-ŋa* "because, although"
-n^y*a* "to drink"<**ima* (no. 66)
-(*i-*)*n*^{y}*u·*, *-i-nu·* plural suffix<**i-má-k* (nos. 107a, 114)
ϵn^y*u·* "they"<**í-ma-k* (nos. 107a, 114).
-ga-n^y*u·* "to die"<**imak* (no. 65)
n^y*aų* "ear"<**imalk*<**ismalk* (no. 7); *ism-* either assimilated to *imm-*>*in*^{y}*-* (cf. Was. *d-amal* "to hear" [read *-ammal*?] <*-*asmalk*) or else *ism-* first passed to *isn-*>*inn-*>(*i*)*n*^{y}*-* (cf. Sal. *p-esna-*, *p-esno-* "to hear, listen"; Ach. *issat* and Sh. *isak* [read *issak*?] also presuppose **isnak*<**ismak*, cf. Ats. *asmak*)

un^{y}*u·* "worm" <**imu-* (no. 25)
u·nyu "string" (read *unn*^{y}*u*?) <**ip*(*a*)*mu* (no. 53)

An original **umu* "face" (itself probably assimilated from **uma*) seems to have dissimilated its labials to *inu* (no. 10); note that this *in-*, in contrast to *un*^{y}*u·* "worm" <**imu-*, does not palatalize to (*i*)*n*^{y}*u* or *un*^{y}*u*.

Change of l *to* n. There is some indication that an original *l* sometimes passed to *n*, whence nasalization of the preceding vowel:

n^{y}*aų* "ear" <**ismalk* via **ismank* (no. 7); cf. Yahi *mangu*: N. Yana *mal'gu*, C. Yana *malgu* (<**isma´-l'-ka-w*, old dual in *-w* from still older dual-plural form in *-l'-*)
ɛndo "day" <**i-nwa* <**i-lwa* (no. 31); but original **anwa* may be assumed as well as **alwa* for "sun"
-kų·i "to come" <**k'wali* (no. 63)

Possibly also:

wan^{y}, *waŋ-* "in" <**wali* (cf. Hokan **x̣-wulu*, no. 115),

but this form is better referred to Penutian **wani* "inside."

Nasalized Stops. The consonant groups *mb* (also *mp*), *nd*, and *ŋg* are evidently equivalent to single consonants, at least psychologically. They are derived in certain cases from simple stops, probably by contraction with an old syllable which contained a nasal, but perhaps also by the direct change of intervocalic *-g-*, *-d-*, and *-b-* to *-g-*, *-nd-*, and *-mb-*:

bii· "day": *nix̂ka-mbi·i-lu·* "the whole day," *a·su-mbi·i·* "in 3 days"
ba·-n^{y}*u* "many": *pu·ru· mba·-n*^{y}*u* "somos muchos"
gi·ko, *gika* "liver": *ga-ŋgi·ga*, *na-ŋgiko* "fever (with liver affection)"
i-'ka "he" (for demonstrative stem *ka* see no. 106): *i-ŋga* "he"
na-goo "to filter, squeeze out": *c-iŋgoo* "wooden churn"

The comparative evidence suggests that under as yet undetermined conditions intervocalic *p* (and *p'*) became *mb*, *mp*; for the change of *-t-* to *-nd-* the evidence is more slender.

amba "excrement" <**ap'a* (no. 8)
umba, *-mpa·u* "fat" <**up'a-* (no. 85) or, more probably, *(*u*)*m-up'a-* (see below)
imba "one" <**ipa* (no. 100)
-ndi·yu "sick": Yan. *m-a·di-* (no. 95) (but see below)

The *-mb-* resulting from *-p-* could become reduced, it seems, to simple *m-* in an unaccented syllable:

mɛ-nu·´ "nine" (="one missing"?) <*imba-* "one" (with *a* umlauted to ɛ by formerly preceding *i* but with *m* not palatalized to *n*^{y}; *imba-* to *mɛ-*, but original **ima* to *n*^{y}*a*)

On the other hand, it seems equally clear that under certain circumstances intervocalic *m* and *n* become semi-stopped to *mb* and *nd* (cf. *w* > *gw*):

ambi· "when?" <**ama-t*, also *-mba* in *mi-mba* "how much?": *ma·-na* "what?" (no. 109)
u·mba, *-umba·-* "earth" <**uma* (no. 34)
-mbi·ya "to cry" <**-mi·-*, *ɛmbi* "owl" <**ami* (no. 64)
ɛndo "day" <**i-nwa*
-ndiɛgu· "to laugh": Sal. *ilik* (no. 71) (but see below)

It is not possible to tell with our scanty materials when *m* and *n* remained and when they shifted to *mb* and *nd*. In the case of *ɛndo* the *d* may have developed as a glide between *n* and *w* of **i-nwa*. In *u·mba* too it is possible that the original form was **amwa* rather than **ama* (or **uma*). This would explain why some of the Hokan languages presuppose a type **ama* (Chimariko, Pomo, Yuman, Seri, Chontal), others rather **uma* (Salinan, Subtiaba). If we look beyond Hokan proper to other languages of the larger Hokan-Siouan group,[9] we find confirmatory evidence for an original **amwa* or **uma* (**oma*) in Yuki *on* (<**om* <**oma*), Wappo *oma* "earth, world"; but Sioux has *mą*.

It may not be without significance that Chipanec, which is closely related to Mazatec and Chorotega-Mangue, has analogous changes of *k*, *p*, and *t* to *ŋg*, *mb*, and *nd*, e. g. *kope* "to see": fut. *ta-ŋgope*, *pomo* "to think": fut. *ta-mbomo*, *tiri* "mountain": plur. *ni-ndiri*. It is quite likely that the general phonetic slant of Subtiaba was determined to a considerable extent by influences of languages of the Mixtec-Zapotec-Otomi group.

Hokan x *and* x̣. There seem to have been two distinct *k*-fricatives in Hokan, a more forward guttural (*x*) and a velar (*x̣*, also labialized *x̣w*). The latter sound is preserved in all dialects as *x* (*x̣*, *x̭̣*), as aspiration (*h*, ‘), or as aspirated stop (*k*‘); good test words are **ax̣wa-* "two," **ax̣wa-*(*x̣*)*wa* "four" (see nos. 101, 103), **ax̣wa'ti* "blood" (see no. 3), and **ix̣ana-* "good" (see no. 87). The more forward *x* is treated like *x̣* in certain dialects (e. g.

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[9] See *Science*, N. S., Oct. 28, 1921, p. 408.

Chimariko, Yana, Pomo, Chumash, Tonkawa), but becomes assibilated to *s*, *c* (*cx*), or *ts* in others (e. g. Karok, Shasta-Achomawi, Esselen, Salinan); good test words are **ixa'* "stone" (see no. 45), **xaka* "flint, knife," and **axa* "water." Such examples as Sub. *ax̣a*, *-aha*, *a·x̣-* "old" (no. 92), *-i·x̣̭nᵛa* "good" (no. 87), and *ax̣ku·* "four" (no. 103) doubtless contain Hokan x̣ and x̣w; x̣ is regularly palatalized to x̣̭ after *i*-vowels. Another set of examples indicates that Hokan *x* was assibilated in Subtiaba to *s*, *c*:

isi·, *si·-* "stone" <**ixa'* (no. 45)
d-asu· "fat" <**axau* (no. 11)
i·ci "tree" <**ixai* (no. 47)
d-i·ci·-lu· "bow" <**ixai* (no. 49)

This assibilation in Subtiaba of *x* to *s*, *c* is important because it shows that the parallel process in Karok-Shastan and in Esselen-Salinan is rooted in an old Hokan distinction between *x* and x̣. That the assibilation took place independently in the three areas is demonstrated by the fact that Chimariko, which is rather closely related to Karok and Shasta-Achomawi but which tends to be more archaic than they, has preserved *x* distinct from the true sibilants. It is very likely that a more careful phonetic study than has yet been published of certain Hokan languages would indicate that Hokan *x* and x̣ are still preserved intact. In Yana this is not the case, for they have fallen into a single sound, *x* or *h* (e. g. *xa-*, *ha-* "water" <**axa* like *ux-*, *u'-* "two" <**ax̣wa-*). One wonders, for instance, whether the Yuman dialects do not distinguish *x* (or *h*) from x̣ (or ḥ). In the Subtiaba examples just given note that *s* remains in "stone" and "fat" because followed by original back vowels but appears palatalized to *c* in "tree" and "bow" because followed by *i·*, *i* from older *ai*. The treatment of Hokan *x* and x̣ in Subtiaba may therefore be indicated as follows:

	before back vowels	*before front vowels*
Hokan *x* > Sub.	*s*	*c*
Hokan x̣ > Sub.	x̣, *h*	x̣̭

A secondary Hokan x̣̭ arose from x̣ (*h*) before *y*; this was shifted to *s*:

i·su· "bone" <**ihyak*, **ix̣yak* (no. 4)

Observe that neither in *i·´su·* "bone" nor in *isi·´* "stone" has the preceding *i* the power to palatalize *s* to *c*. This is because the *s* is not a true sibilant in origin but is secondarily developed from *-xy-* and *-x-*. Contrast forms like *mi·´ca* "white" with primary *-s-* (see no. 98).

Of much later date than the passage of Hokan *x* to Sub. *s*, *c* is that of Sub. *x* to *s* when immediately followed by a consonant. This change has not been consummated yet, for we find many alternative forms.

max̣ma "quick": *masma*
na-x̣ka "to go": Ar. *na-ska*
na-x̣to "to shave, bark": *osto* "bark"
dax̣ka "it stinks": *-da·ska* "to smell"
na-gox̣ta·-lu· "volverse": *ni-gu·sta-ma* "te pareces"
nu·x̣mba "mulatto": *nu·smba*
ax̣ku· "four": Ar. *asku*
roax̣-n^{y}*u·* "family": *daka-ruas* n^{y}*u·nana* "gente de lejos"

The last example (cf. *ro·ax̣i* "people") and the etymology of *ax̣ku·* (see no. 103) show that *x̣* is the older sound in these consonant groups and that they have originated by the dropping out of unaccented vowels that originally stood between the *x̣* and the following consonant. A somewhat similar process, but in the opposite sense, has taken place in Yana. Yahi *-x-*+consonant and *-s-*+consonant fell together into *-x-* (whence -ʿ-)+consonant in Northern and Central Yana.

Loss and Contraction of Vowels. We have already seen reason to believe that final vowels, presumably only if short and unaccented, are lost in Subtiaba, also that medial short vowels, if preceded by the accent, drop out and thus cause consonant clusters to arise. A few further examples are:

-g-iu "to eat" <**-g-iwa* (no. 67)
-t-a·u "to sit" <**-t-a·wa* (no. 77)
a·´x̣-mba "old": *ax̣a´* "grown up," *d-aha´* "maturity" (no. 92)
ax̣-(kwi·) "little": *(gwa)-x̣o* "a little" (no. 116)

The group **ax̣wa´* seems to develop to Subtiaba *a·*, probably via *aha´*:

a·- "not" <**ax̣wa´* (no. 117)
a·- "two" in *a·-pu·* "two," *a·-su·* "three" <**ax̣wa´-* (see nos. 101, 102): *ax̣-ku·* "four" <**a´x̣wa-* (no. 103)

d-aca-lu· "grass," _m-a·ca_ "green" < _*ax̣wa´si_ "grass," _*m-ax̣wa´si_ (and _*m-a´x̣wasi > *m-ax̣ᵘsi?_) "green" (nos. 38, 88); but if _-aca-_, _-a·ca-_ are to be understood as _-a‘ca-_, this example does not belong here
ε´εdi, _·ε´'di_ "blood" (read _ε·´'di?_) < _*a·´'di_ < _*ax̣wa´'ti_ (no. 3)

The loss of unaccented short vowels between consonants is a frequent process in Hokan dialects and probably accounts for most or all of the consonant clusters in these languages. Thus, Hokan _*i´pali_ "tongue" becomes _i´p'li_ in Achomawi; Hokan _*i´sama-_ "ear" becomes _*i´sma-_, whence Atsugewi _a´sma-k_, Achomawi _i´ssa-ɬ_, Washo _d-a´mma-l_ "to hear," Salinan _p-esna´-_ "to hear"; Yana _xa´ga_ "flint" corresponds to _dat'-xga´-i-si_ "it has much flint." This process must have operated in countless Subtiaba words for which we have no evidence in Subtiaba itself. Frequently, as elsewhere, consonants thus brought together have become assimilated. In a number of examples we can surmise the former presence of these vowels from the comparative evidence given by forms in other Hokan languages, e. g.:

nʸau̜ "ear" < _*i´mmʸa`nk_ < _*i´sma`lk_ < _*isama-_ (no. 7)
_-u·mi·u_ "navel" (read _-ummiu_) < _*u´npi`w-_ < _*u´napi`w-_ (no. 17)
_ω·s'nk̓o·_ "lizard" < _*a´swa'nk̓a`k_ (no. 27)
_i·na_ "leaf" (read _inna_) < _*i´tna`_ < _*i´tana`_ (no. 39)
u·nʸu "string" (read _unnʸu_) < _*i´mmʸu`_ < _*i´pamu`_ (no. 53)
_ax̣ku·_ "four" < _*a´x̣ᵘgwa`-k_ < _*a´x̣wa-wa`-k_ (no. 103)
_ux̣ku·_ "moon" < _*ux̣gwa`-k_ < _*u´x̣awa`k_ (no. 40)
_a·x̣ka_ "spider" < _*a´x̣aka`_ (no. 24).

(_To be continued_)

ENTOMOLOGY AMONG THE BELLACOOLA AND CARRIER INDIANS

By HARLAN I. SMITH

THE Bellacoola Indians live in the Norway of Canada, about midway of the Pacific Coast, where Sir Alexander Mackenzie, the first white man to cross Canada, reached the sea; that is, about half way between Vancouver and Prince Rupert. Their country is around the head of the inlets about sixty miles in from or east of Ocean Falls and the usual route of the steamers up and down the coast. This inland passage is with few exceptions protected by the outer fringe of islands. The Bellacoola language is one of the Salish linguistic stock. The people are of the typical North Pacific Coast culture, characterized by the extensive use of red cedar and sea products, especially salmon, huge houses of split cedar planks with carved house posts, and totem poles, and immense seagoing canoes dug out of cedar. They were expert carpenters and had a peculiar art, especially in painting and carving, largely of conventionalized animal forms—a valuable contribution to the art of the world. This art may become of great financial value to the manufacturers of this country as well as a magnet capable of exploitation to bring in tourists with money from foreign lands. These Indians had a very highly developed social organization, many dramas and rituals, and a complex financial system popularly known as the potlatch.

The Carrier Indians of Ulkatcho, on the other hand, live in the high plateau of the semi-arid region, perhaps 75 miles northeast of the Bellacoola. They differ from the Bellacoola in language, appearance, and culture perhaps as much as do the Turks from the English. They had a less realistic art, which was largely geometric and pictographic, highly conventionalized and symbolic. Their social organization and financial system also were less highly developed.

From time to time during 1920-1923 inclusive, I have secured from both these peoples data about their use of materials. Part of these data refer to insects, and may be of interest to entomologists, although my spelling of Indian words is very problematical, because some of the sounds I can neither hear nor make, and I am unable to record adequately many of those that I can hear. The data here given are preliminary to a complete working over of my notes, but are believed to be nearly complete.

Insects apparently were not so well observed by the Bellacoola as were useful mammals and plants, the stinger of the bumble-bee, for instance, being supposed to be in its mouth. Few insects had names, that is, mainly those which were used or which troubled the Indians. Insects were not used for food, and honey was unknown until after the coming of the white man. The head of the gad-fly was used as a pattern in painting designs, the nest of the yellow-jacket in sympathetic magic or witchcraft, and "fly spit" was said to be good for sores. They had a story about the bumble-bee.

Among the Ulkatcho also observation of insects was weaker than that of mammals and plants, and they apparently had names for only a few insects, those which troubled them. Ant lyon pits and its method of taking prey were known. Insects were of no use to the Ulkatcho whatever. An instance was observed of an Indian amusing himself with a buzzing fly held in his mouth. They employed smudges, fish oil, gum of the cottonwood, and blossoms of cow parsnip with oil to protect themselves from mosquitoes, black flies and no-see-ums, and smoke to protect foods from flies.

The Ant lyon, among the Ulkatcho, is called Kinnelkats. It is said to be numerous at Ulkatcho, but that it was useless and that there was no story about it. My informant voluntarily showed me the pits made by the larvae of this insect and, catching ants for the purpose, demonstrated its well-known method of taking its prey.

The grasshopper (*Orthoptera*), that makes a noise by rubbing its wings together when it flies, was called Telcus, among the Ulkatcho.

"Fly spit," that is the material surrounding a nymph of a spittle insect, also known as a frog hopper (*Cercopidae*), is said by some old Bellacoola men to be good for sores, but my informant did not believe it.

Among the Ulkatcho it is numerous, but was not used, not even as a medicine.

A bumble-bee, identified as *Bombus appositus* Cresson, by Dr. H. J. Franklin, among the Bellacoola, was called Tikquanats or the large Skotl, Skotl being the name of three kinds of insects, a bumble-bee, a yellow jacket, and a hornet. It was not taken nor used, and was said to do no harm to people. My informant did not know whether it had a house or not. Neither did he know that it made honey until told so by white men. They say the bee took one of the prickers of the swamp gooseberry for a stinger, but my informant said he did not believe this. He thought it had a sting in its mouth, not in its tail, until I showed him. The Bellacoola have a story that a being considered by a little girl to be a man, but by an elder sister to be a bumble-bee, was once seen coming from the noonday sun. The little girl became blind, but her eyes appeared to be all right. Many thought she was made blind by too much sunlight when she looked at the man who was a bumble-bee.

Among the Ulkatcho, this bumble-bee was called Whultocho, *Whulto* being the name of a yellow jacket, and *cho* meaning large. *Whus* or *Whis* means pricker. The bumble-bee was not used as fish bait.

An insect, probably the hornet, is called Slow lowstl, by the Bellacoola, who say it has a little white on the tail and makes a small nest in a tree in July.

The yellow jacket among the Bellacoola was called Quolalaits (Clolaclaylaits) (Clolaclaylaits skotl) while all three kinds of insects, the bumble-bee, the yellow jacket and the hornet, were called Skotl. The yellow jacket was known to make a nest. The nest was used in sympathetic magic or witchcraft as follows: When one wished to cause the child of one's enemy to grow up to be a quarrelsome person, the nest of the yellow-jacket was burned and the ashes rubbed on the child. When the child grew up he or she would fight with everyone.

A fly which does not bite, perhaps the house fly among the Bellacoola, was called Mammish, and was said to lay its eggs on fish and fish eggs. The place called Numammish was so named because the people thought they saw flies and they said *mammish*, but when the supposed flies fell they were seen to be toads.

Among the Ulkatcho, this fly was called Asthuz, and was said to lay its eggs on salmon. To keep off flies of all kinds and mosquitoes the blossoms of the cow parsnip, *Heracleum lanatum* Michx, called Goosss in Ulkatcho, were put in oil of the eulachon fish or any kind of oil and the mixture was put on the body. Every food that was smoked was smoked so that flies would keep away from it. Flies were not used as fish bait.

The Gad-fly, *Tabanus* sp.? probably *sonomensis* O. G. of the family *Tabanidae*, which is commonly called horsefly, is numerous when the horses come down to Bella Coola from the interior. Among the Bellacoola it is called Silt lay estl. It is said to lay its eggs in the backs of the caribou in July, and these hatch into "worms." The face and eyes, being pretty, were used long ago as a pattern for a picture which was painted on fine boxes. There was no story of this fly.

Among the Ulkatcho, this gad-fly is called Clez co, and a smaller one is called Clez cho yaz, *yaz* signifying small. Once I was told that no medicine was used to keep off the gad-fly, but on another occasion that cottonwood gum with oil was used. Apparently for his own amusement, my Ulkatcho Indian informant held one of these flies by the abdomen inside his mouth and made it buzz.

Two kinds of little black biting fly, horse fly (*Symphoromyia* sp.?) apparently considered as one, are called Skikpie estl in Bellacoola. They are called Clez cho yaz in Ulkatcho *yaz* signifying small.

The Black fly, *Simuliidae*, among the Bellacoola is called Ticos cosee and Alk co ok hotl.

Among the Ulkatcho it is called Whuchu, while Tsih is the name of black flies, mosquitoes, and no-see-ums. All these were kept off with a smoke smudge made with a fire of any kind of wood on which were put such things as green, wet, or rotten wood, or grass. Black flies were sometimes kept off by putting oil of either salmon or trout on the face and hands. Cottonwood gum with oil was also used for this purpose.

The No-see-um among the Bellacoola is called Sleigh et el ke.

Among the Ulkatcho the no-see-um is called Whetlcatl and it is said that the bite of this little fly causes swelling and sickness. It was kept off in the same manner as the black fly.

Mosquitoes, *Culicidae*, among the Bellacoola, were called Pikim.

Among the Ulkatcho they were kept off with smoke in the same manner as the black fly, and with blossoms of the cow parsnip in oil in the same manner as flies. It is not clear if the gum of the cottonwood was or was not used for this purpose, as it was to keep off no-see-ums.

Among the Ulkatcho "worms" were not used as fish bait.

Victoria Memorial Museum,
Ottawa, Canada.

REPORT OF A NEW DOUBLE CONOIDAL PIPE FROM KENTUCKY

By WM. S. WEBB

IT IS believed that the Indian Pipe shown in Figures 1, 2, is a good example of the Double Conoidal pipe as classified by McGuire[1] having, with the usual distinguishing characteristics, other interesting features.

This pipe was obtained from Mr. John Cinnamon, of Lawrenceburg, Ky., who found it while cultivating land on the farm of Mr. T. J. McCouan, one mile east of Farmdale in Franklin County, Ky. An old pasture which had been in bluegrass sod for many years had been ploughed up in the spring of 1913, and after ploughing, the sod was cut by a disk harrow. This pipe, covered with earth and clay, became entangled between neighboring disks of the harrow, arresting its motion. In removing this obstruction, this peculiar stone was discovered. When found it was not known to be of any historical significance, but because of its unusual form and color it was preserved in the home of the finder, serving for many years as a "door stop," a use to which it is well adapted, being roughly cubical in form and rather heavy, weighing 1212.5 grams (2.9 lbs.).

Notwithstanding this service, the manner of its discovery, and the probable fact that it has resided for perhaps hundreds of years in the surface soil, easily within the "frost zone" this specimen appears to be but little the worse for wear, showing only one relatively recent scratch, that on the base surface. Several small chips have been split from the edge of the base and one of the four engraved images is slightly marred, but all of this chipping has the appearance of great age, and points to the conclusion that practically all damage which has been done this specimen was sustained by it while still in the service of its prehistoric possessor.

This pipe was probably cut from a block of sandstone, and presents a general cubical appearance, having four vertical faces, each being an approximate rectangle. The base is 4-1/4 inches long from front to rear, and 4 inches broad. The height is fully 3 inches above the base section. The pipe proper rests upon a base section 3/4 inch thick, the outline of which is exaggerated by a deep groove cut parallel to the plane of the base, (see Figure 1). Portions of this groove seem to be worn, suggesting that it served a double purpose of outlining the base section, and also providing an opportunity for attachment of a thong. Such a thong may have served as a means of carrying the pipe or as a simple attachment to any other form of support.

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[1] Joseph D. McGuire, Report U. S. Nat. Museum, Part 1, 1897.

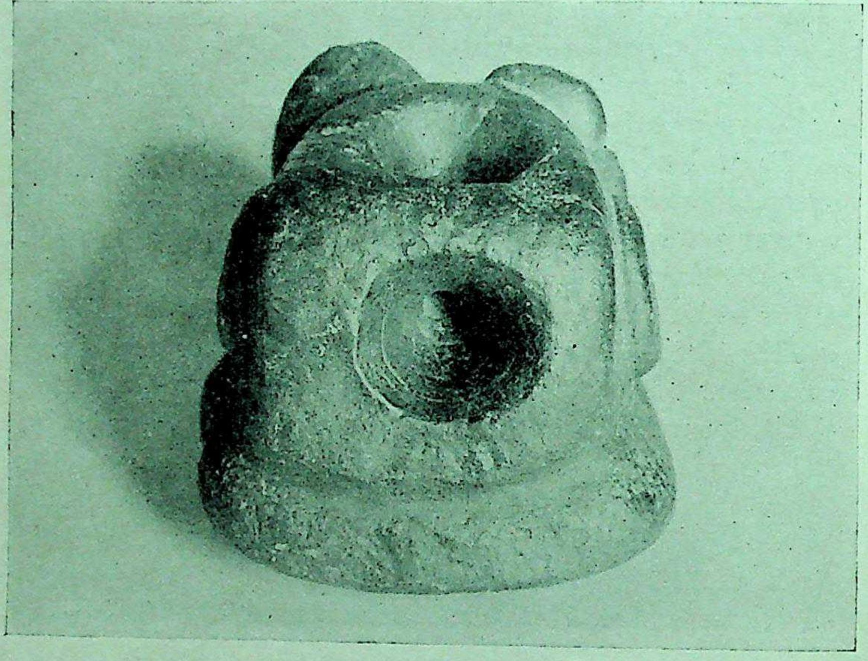

FIG. 1. Back view of pipe.

The four faces of the pipe rise from the base almost perpendicularly. Into the rear face is cut the large conical stem hole, the diameter of which at the face is 1-3/8 inches and decreases to 1/4 inch diameter at a depth of 1-1/4 inches. The stem hole is almost an exact duplicate of the bowl, which has the same depth and slope of side. These two conical drillings could have been made by the same blunt reamer. That they were originally reamed out is clearly shown by the circular grooves still existing in the conical face of the stem hole. However, the main bowl shows several vertical grooves also, which appear to have been made with a blunt instrument used as a chisel. Such grooves could easily have been made in cleaning the bowl by scraping, possibly after the pipe had been used. The grooves in both bowl and stem hole appear to be quite as old as the other surface of the pipe,

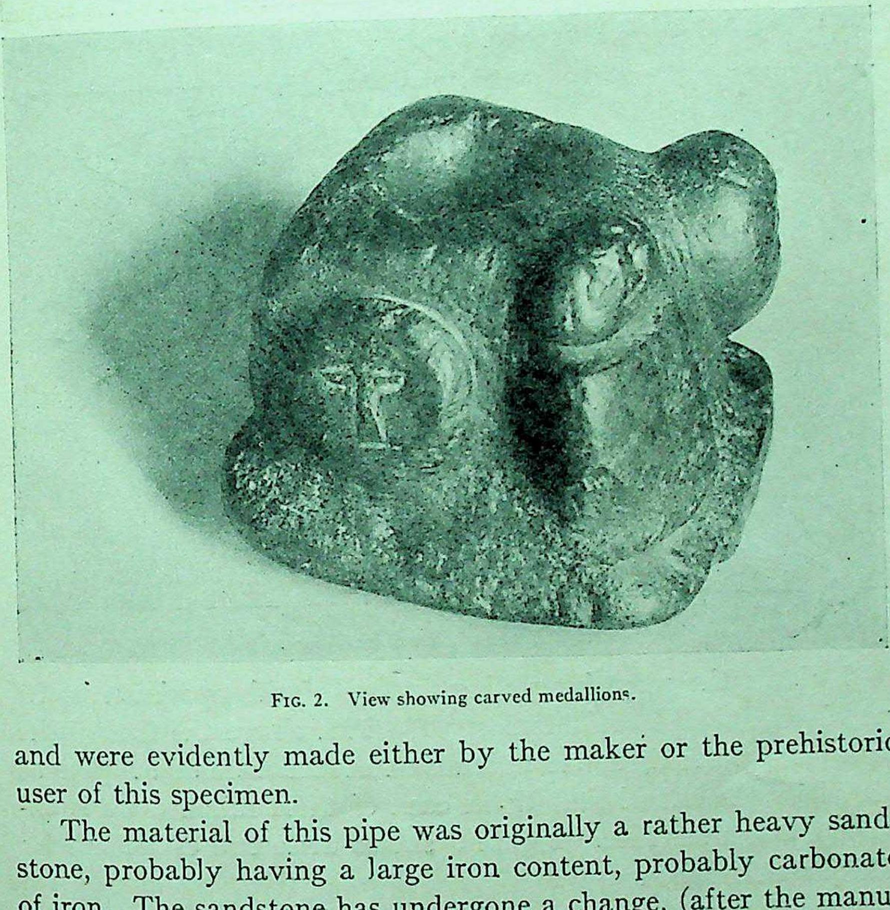

FIG. 2. View showing carved medallions.

and were evidently made either by the maker or the prehistoric user of this specimen.

The material of this pipe was originally a rather heavy sandstone, probably having a large iron content, probably carbonate of iron. The sandstone has undergone a change, (after the manufacture of the pipe), as the result of being hundreds of years in the soil, not deeply covered, and exposed to the action of the air and soil water. The specimen has become covered with limonite ($2Fe_2O_33H_2O$) to a depth of 1/16 inch or more, giving the pipe a fairly smooth hard surface, dark red in color. This coating gives the characteristic red line when rubbed on unglazed porcelain. Professor McFarland of the Department of Geology of the University of Kentucky who kindly examined this specimen expressed the opinion that this coating may have been derived from carbonate of iron in the original sandstone, by oxidation and weathering to limonite, or it may have been deposited on the sandstone as the result of the action of soil water, rich in iron content. The present density of the specimen is 2.24. The actual water displacement volume is 541 c.c.

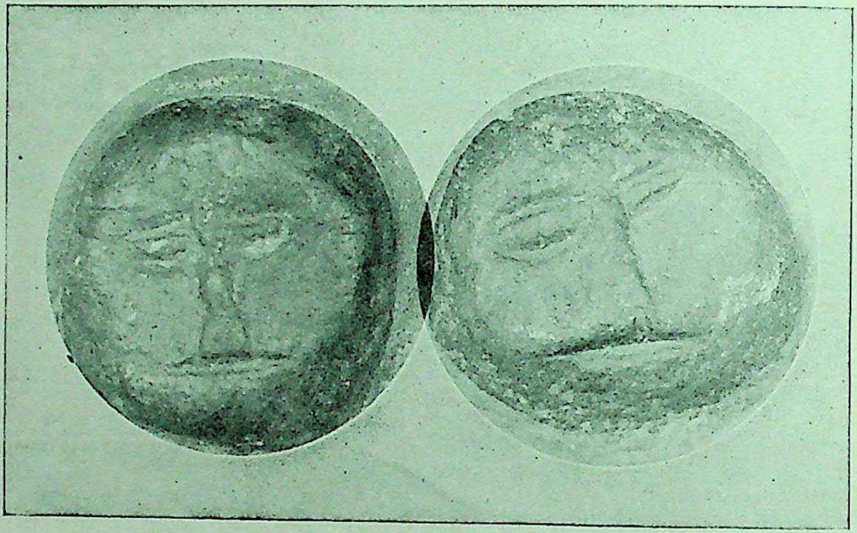

FIG. 3. Detailed view of medallions.

Perhaps the most interesting feature of this specimen is the medallion-like disks raised nearly 1/4 inch above the face of the pipe, one on the right and another on the left face of the pipe as one views the stem hole. Upon each of these raised disks is engraved a human face. Figure 3 shows these two disks, side by side for comparison.

This engraving was done by deeply incised lines, the eyes being each represented by crescentic lines concave toward each other. The nose in both images is rather boldly represented by a raised triangle, extending from between the eyes, base downward, completely to the deeply incised line representing the mouth. In both figures the surface of this triangle is broken by a slight increase in elevation, giving to this nose the "Roman" form.

On the front face of the pipe, the side opposite the stem hole, are to be found two raised figures, one a face carved similarly to the medallion-like disks, but being in such high relief as to appear almost like a spherical head. A second image representing a head and form of body also raised in high relief appears on the front face of the pipe (see Figure 2). These two images are much less carefully wrought out than the two side carvings, and the features of the nearly spherical head are slightly marred as described above, by an apparently old injury.

The base of the pipe has a slightly convex surface, and it would appear that the surface was once smooth and had a fair polish, if we may judge by a portion of the surface remaining. However, in almost the exact center of this surface there is a large pit, nearly one inch in diameter and almost 1/4 inch deep giving to the basal surface the usual appearance of a hammer stone. It is not at all impossible that the pipe might have been so used. Because of its shape it was fairly easy to hold in the hand, and because of its weight it might easily have served to crack nuts, or buffet a stone chisel, it being not an unusual thing to find evidence that among stone age men one tool served two or more purposes.

When we consider the rather considerable weight of this specimen, one wonders how it was supported while in use as a pipe. Perhaps the large pit hole in the basal surface, and the groove about the basal section could be explained on the basis that they enabled the user to attach it by means of a thong to a support, perhaps to the end of a small post, the other end of which could be easily set in the earth. One is tempted to speculate as to whether or not this specimen was really a pipe as we ordinarily understand the term. The fact that as a pipe it appears unwieldy, and that it may have been designed to be supported on a vertical post, suggests that it might have served in some ceremony, religious or otherwise as a small altar, from which smoke was expected to rise at an appointed time. Because of the size of the bowl, a very considerable amount of combustion could take place, especially if assisted by blowing through a hollow cane presented to the very large stem hole.

The pipe is now in the private collection of the author and is believed by him to be much older than any of the hundred or more Kentucky pipes in this collection. So far as he is aware, this form of pipe has not heretofore been assigned to any particular linguistic group, tribe or culture.

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BOOK REVIEWS

METHODS AND PRINCIPLES

Human Origins; A Manual of Prehistory. GEORGE GRANT MACCURDY. New York and London: D. Appleton & Co., 1924. 2 vols., LIV, 956 pp., 410 illustrations. Price, $10.00.

There being available already about twenty general treatises on European prehistory, mostly of recent date, the man who proposes to add yet another to the list should, it would seem, have some special reason for doing so. Fortunately, the present author, Research Associate with professorial rank at Yale University, possesses all the excuses necessary under the circumstances in the shape of special qualifications for the task. He has given, as he says, all of thirty years to the patient accumulation and study of the great multitude of facts upon which rests today the illuminating account of early man and his culture. Indeed, it is entirely safe and proper to say that no other professional student in America, or in Europe either for that matter, has a first-hand acquaintance with the facts in question equal to that of Dr. MacCurdy. American anthropologists, therefore, while leaving congratulations to others, may take genuine satisfaction in that one of their number has been enabled finally to finish this long contemplated work.

The two sumptuous-looking volumes appear to contain everything that could be expected, from Preface to Index, including such features as a five-page analytical Table of Contents, eleven pages of glossary, various bibliographies, three appendices covering 178 pages, and an index of 38 pages. The work is liberally, almost lavishly, illustrated; and the mechanical quality of these illustrations, as well as of the typography itself, seems all that could be desired.

Volume I, devoted chiefly to Paleolithic man, opens with a historical introduction giving a brief account of the rise and development of prehistoric archaeology, the results of which are summed up in the still briefer form of chronological tables. The second chapter treats of the Ice Age and its bearing on man's antiquity, the discussion being re-emphasized and clarified by means of correlation schemes. Chapters three to six, inclusive, are devoted respectively to the

Eolithic Period, the Lower Paleolithic, the Mousterian Epoch, and the Upper Paleolithic Period. The treatment here conforms in all essentials to the now practically stereotyped plan followed by all the compendium writers. That is, for each culture level the principal forms of artifacts are named and illustrated, their modes of occurrence are given, the accompanying faunas are listed, and something is afforded by way of outline schemes and maps to indicate the probable distribution of the given culture over the Old World at large. Chapter VII, covering about 86 pages, presents an excellent and comparatively original account of Paleolithic art. This account, while necessarily limited, gives through both text and illustrations a clear idea of all the successive phases of sculpture, engraving, and painting. The very latest finds and determinations are included. Tabular analyses with maps showing the geographic occurrence of various typical representations, such as the human form, the horse, etc., are given; and all other organisms, animal and vegetable, treated by the cave artist, as well as the more distinctly ornamental designs of geometric character, are duly dwelt upon. Altogether this strikes one as the most appealing subject dealt with in the book. In Chapter VIII under the title of Fossil Man the author furnishes a complete descriptive catalogue—fully 130 pages long—of all the known skeletal remains of early man and his progenitors, together with brief citations of the prevailing opinions regarding the character and value of the data. An additional short chapter summarizes the outstanding characteristics of the Old Stone Age and closes the volume.

The second volume treats in 296 pages (Chapters X to XV) all the remaining divisions of prehistoric time. Thus a short chapter is devoted to the Transition Period, in which have been included the Azilian-Tardenoisian and Campignian culture phases. The Neolithic Age comprises two long chapters, one descriptive and the other explanatory in character; while the Bronze and Iron ages receive each a chapter of moderate length. The work proper ends with a very brief chapter describing the physical characters of post-Pleistocene man. All the rest of the volume, some 220 pages, is given over to index and appendices. One of these latter furnishes interesting legislative data regarding European classification and preservation of antiquities; another lists the principal art objects and the sites at which they were obtained; while the third and most valuable gives, in brief outline form, all the important archaeological stations which have yielded stratified remains, together with notes on their discovery and exploration, as well as citations of the principal bibliographic references pertaining to each.

A work of such scope and size as the above is entitled to more extended and judicious comment than the reviewer is in position to accord at the present moment. I have faithfully read it through; but as I have never done as much for the similarly comprehensive treatises by Déchelette and Hoernes, I have no clear conception of what it may be right to expect. What is a manual, a handbook, a summary treatise? For whom, precisely, is it written? It happens that I have already found this work useful in connection with the classification of certain museum specimens; but I trust that for every museum man who is likely to use it in this country the work will be perused by some thousands of university students and general readers. In other words, I take it that the presentation is designed to serve the wants of the great mass of intelligent readers who have no access to actual museum collections but who, for a correct idea of the data considered, must rely on illustrations. That being the case, one is moved to say that in spite of the liberal and generally judicious use of illustrations, something further is still to be desired along that line, especially in the second volume.

Broadly stated, the textual and illustrative presentations in the second volume are both much less complete and systematic, as well as more uneven in quality, than is the case with the first volume. Some important, i.e., chronological guide types of artifacts, are not illustrated at all; while certain other types are perhaps over-illustrated. This is noticeable from the Azilian-Tardenoisian chapter onward. But there are places also in the first volume, such as on page 92 or 93, where a diagram seems badly needed to illustrate the relations of deposits there cited. To compensate for such additions, one of the two illustrations of the Tuc d'Audubert cavern entrance, e.g., could well be omitted. In place of illustrations some sort of table showing the time of appearance of new implements might serve.

The author, obviously, has had some difficulty or has been uncertain with regard to the proper treatment of his subject from the end of the Magdalenian culture onward. It does not seem quite correct, for instance, to group the Campignian with the Azilian-Tardenoisian. The one culture was hardly derived from the other: there was a hiatus of some sort between them which is yet to be explained. Again, in treating, for example, of the Iron Age, the data, say for Sweden, receive no mention, the facts considered being derived almost entirely from central Europe, including Switzerland and France. No doubt the difficulty of handling at once so many localized cultural variations is great; nevertheless, striking similarities are also present, sufficient at least to give uniformity to several general changes passing over the whole of Europe—as for example burial methods—and should receive due consideration. As for the differences or the contemporary modifications involved, these could profitably have been set forth either by illustrations or else by brief tabular schemes. But as a matter of fact the volume affords ample room for textual treatment, if necessary at the expense of certain of the appendices.

Of minor errors of omission and commission it is not necessary to write here in detail. Slips, typographical and otherwise, are comparatively few. One may, however, question the advisability of some of the French terminology which has crept in, such as *couche*, *mêlange*, *non-remanié*, *pression*, *champhere*, etc. On the other hand, Dr. MacCurdy's new interpretation of coup-de-poing as "cleaver," while suggestive, can probably do little more than add to our bewilderment. I note the omission of reference to shell-mounds in the introductory chapter and have been told of the omission also of certain important Paleolithic stations in Austria. For myself, I regret the omission of some introducing note or paragraph to the chapter on Eoliths—something to help the general reader appreciate the significance of the facts he is about to encounter. I question the correctness of the introduction of the horse into Egypt as early as 2300 B. C.; likewise the spelling of "pole" as referring to axe blades; and also the propriety of devoting several paragraphs to a description of the Ipswich skeleton and its discovery, the whole to be dismissed in the last sentence by the statement that the discoverer has withdrawn his claim and the find is in the discard. Lastly, the omission of specific bibliographic references will probably be regarded as a serious fault by many. But after all, in a work which probably contains more well-ascertained facts than any other ever written on the subject, some defects and errors are to be expected.

Taken as a whole, Dr. MacCurdy's work impresses one primarily as a presentation of facts. This is precisely what it seems to me a manual should be; and it is as such that it fills a distinct want. Interpretation is a very desirable thing, no doubt; but we have already several books of that type and may expect many more, for those are comparatively easy and pleasant to write and, as a rule, correspondingly ephemeral in value. So, while one may register disappointment that the author did not come out in the open to tackle, for example, Reid Moir and his extraordinary revision of Paleolithic and pre-Paleolithic chronology in its relation to geologic chronology, on second thought it seems as well that he should not have committed himself on topics still under discussion. Indeed, if the work under consideration is open to criticism, it is in reference to occasional seemingly too positive interpretations, such as a thorough-going ethnographer would avoid.

N. C. Nelson

The prehistory of man—the study of his physical, mental, and cultural development through the ages preceding the earliest recorded history—may well claim a place among the younger sciences, seeing that a century has not yet passed since it received general recognition as an accredited subject for serious scientific research. Nevertheless, the subject is of such general and commanding interest, its followers so eager and untiring in their efforts to trace the dim back trail of humanity, that every succeeding decade adds appreciably to our knowledge, and thus, in the course of a few years, the earlier accounts are rendered incomplete or even antiquated, and there is a constant demand for the latest results of investigation. A welcome addition to the most recent literature on this subject is the *Human Origins* of Professor George Grant MacCurdy of Yale University, who, in the two volumes of this "Manual of Prehistory" has summed up the results of nearly thirty years devoted to research, personal observation, and excavation in the European field. In the first volume he discusses "The Old Stone Age and the Dawn of Man and His Arts," devoting chapters to the development of prehistory, the chronology of the Glacial Epoch, the industrial stages of the Eolithic and Lower, Middle, and Upper Paleolithic periods, Paleolithic art, and fossil human remains. The second volume deals with the transition from Paleolithic to Neolithic, and the Neolithic, Bronze, and Iron Ages, including contemporary human skeletal remains.

In discussing fossil man Professor MacCurdy speaks but slightingly of the attempted reconstructions made by other anthropologists. He admits that they may serve to stimulate interest, but feels that they are apt to be misleading, and are at best "a mass of hypothetically coordinated details superficially stamped with all the precision of a genuine portrait." There is no doubt that, as he says, "both by inclination and training we are more critical of human representations than of any other," and no one will deny that in such reconstructions the size and shape of the mouth, lips, ears, and soft parts of the nose, color and texture of the skin, blondness or brunetness, character and abundance of hair, are all matters which can only be hypothetic, as there is no satisfactory evidence. Nevertheless, when it comes to modeling the top and back of the head, the slope of the neck behind the ear, the brow, temple, cheek, and chin, the artist is on sure ground, and who shall say that he does ill to complete the picture by supplying the remaining parts and thus offering a suggestion as to what the whole might be, so long as he is careful to make it clear where fact ends and conjecture begins?

In truth, Professor MacCurdy's *Human Origins*, or any other manual of prehistory, is neither more nor less than just such a reconstruction, in which the known facts are recorded, and the gaps pieced by conjectures and hypotheses worked out after cautious and painstaking study. In western Europe a homogeneous succession of industrial stages has been demonstrated, and a number of human fossils of Pleistocene age have been found associated with faunal and cultural remains. Amazing specimens of Paleolithic art have been discovered—both portable and stationary—in many cases under such circumstances as to preclude assigning them to any later date. With these known facts for foundation the prehistorians have spared no effort to build up a convincing picture of the life and development of primitive man. The religion and psychology, the tribal organization, industries, cults, and practices of existing primitive peoples have been studied, geographic and climatic changes of Pleistocene time have been considered, evidence afforded by the fauna and flora of the glacial and interglacial stages has been weighed, and from all this has been developed a hypothetic reconstruction of the probable environment and nature of prehistoric man. And again we ask, who shall say that this is ill done, or be other than grateful for the effort that sought to give us, as far as possible, a faithful portrait of our forebears?

In common with many other prehistorians, Professor MacCurdy seeks to harmonize the fourfold evidence of geology, paleontology, archaeology, and anthropology in regard to prehistoric chronology and environment. It is obvious that each of these four sciences has essential evidence to contribute concerning the past of humanity—the extent, character, and climate of the land in which man lived, the animals that he hunted or that hunted him, the tools and weapons that he used, and his physical structure. But it is to be regretted that this wholly praiseworthy attempt to correlate the evidence of four separate sciences should have introduced an unfortunate confusion of terms. Such phrases as "Eolithic race," "Mousterian fauna," "Cro-Magnon mural art," are frequent in the literature of prehistory, but they do tend to obscure the force and bearing of the evidence adduced. Let us hope that a time may come when the names of geologic periods, Pleistocene faunas, industrial stages, and human races will no longer be interchanged.

In the chapter on the Ice Age it may be noted that the *nevé* is the field of closely packed, granular snow which is the source of a glacier. It is not the glacier proper until it has been subjected to sufficient pressure to change it into ice, after which it is no longer nevé. Of course the nevé lies above the snow line, and sometimes part of the glacier as well. But the difference between the nevé and the body of the glacier is not a difference in elevation but a difference in compactness of texture—the difference between packed snow and solid ice. Professor MacCurdy is so up to the last minute in regard to the postglacial phases in Scandinavia according to the recent researches of De Geer and Antevs, that it is somewhat of a surprise to find him retaining the Laufen retreat in his chronologic calculations. It would also obviate confusion if the chronologic tables given on pp. 26-27 showed that Holocene and Pleistocene are two subdivisions of the Quaternary, and Tertiary and Quaternary two subdivisions of the Cenozoic.

The existence of a "Warm Mousterian" is a debatable ground for prehistorians. The Warm Mousterian stations named by Professor MacCurdy are at Montières, Villefranche-sur-Saône, La Ferrassie, La Micoque, Laussel, Grimaldi, Krapina, Taubach, Ehringsdorf, Cotencher, Drachenloch, and Wildkirchli. The three last-named sites are in Switzerland well within the limits of the last Pleistocene glaciation. The grotto of Cotencher was over 1300 feet below the extreme elevation of the Rhone glacier during the Würm maximum. At all three stations the industry and faunal remains were similar. The industry has been called Mousterian but is not typical. Professor MacCurdy classes it as such, and assumes that these stations could not possibly have been occupied except during a warm interglacial stage. But surely even the severities of a glacial stage could hardly have offered insuperable difficulties to hardy Paleolithic hunters adventuring into the mountains in summer in quest of food. The game they hunted consisted almost entirely of cave bear, and it would seem that the evidence afforded by the position of the stations and by the cultural and faunal remains is insufficient either to prove or disprove the existence of a "Warm Mousterian." The industry found associated with human remains at Krapina, Taubach, and Ehringsdorf has been variously identified as Chellean, Acheulean, and Mousterian. It is agreed that it is not a typical and unmistakable Mousterian. Therefore no positive conclusions in regard to a Warm Mousterian can be drawn from the associated fauna. As to Grimaldi, it might reasonably be expected that even during a glacial stage a warm fauna might manage to survive at so sheltered and southern a site. The list of Warm Mousterian fauna on p. 142—which presumably applies to all the stations cited, including those in France—names the elk, bison, beaver, roe deer, cave lion, and wild boar, none of them especially characteristic of a warm climate. Five other species listed appear also in the list for the "Cold Mousterian." There remain just three—*Elephas antiquus*, *Rhinoceros merckii*, and *Hippopotamus*. The present habitat of these genera is in a warm country, but observers tell us that, like many other large mammals, they are comparatively indifferent to cold. To what degree the Pleistocene species named above were tolerant of cold we do not know, nor can we do more than guess at the summer temperature of the Somme and Saône valleys during glacial times. It would therefore seem that as yet the case for the "Warm Mousterian" is not proven. It is a hypothetic feature of the prehistoric reconstruction.

Quite the contrary is the case of the cold fauna accompanying the Mousterian, and the succeeding Late Paleolithic industries. Here the prehistorian has abundant indisputable evidence for the presence of an Arctic-Alpine fauna associated with human cultural and skeletal remains.

Again, the association of Heidelberg man with the Pre-Chellean industry is purely hypothetic. There is no evidence either to prove or disprove the possibility. On the other hand, the association of Neanderthal man with Mousterian industry, and of Crô-Magnon man with Aurignacian industry, is beyond dispute.

In describing the fossil human remains it is unfortunate that the skulls pictured were not posed according to the Frankfort convention, so that the actual degree of prognathism and other features mentioned in the text might have been more apparent. The Brünn skeleton could hardly be referred to the Aurignacian merely on account of its being stained with ocher, for the mortuary bed of ocher occurs in sepultures of Aurignacian, Solutrean, Magdalenian, and Azilian times, as Professor MacCurdy himself shows. The character of the associated artefacts would be a more reliable basis of diagnosis.

It is in the diagnosis of artefacts, the description of implements characteristic of the various cultural phases, that Professor MacCurdy excels. His chapter on the Eolithic Period is conspicuous for its clear and conservative presentation of a very difficult subject. The same conservatism marks his discussion of "figure stones" in the opening of his chapter on art. Indeed, in all the text relating to cultural and artistic remains one feels that he speaks of what he has seen and handled, and the caption of many an illustration closes with "Photograph by the author." The successive Paleolithic industries are fully and understandingly described. Perhaps there is too much emphasis laid on the cultural change from Mousterian to Aurignacian. It is one of the puzzles of prehistory that the great changes effected at this time—the change from the Neanderthal to the Crô-Magnoir race, the introduction of an extensive industry in bone, and the blrth of art—should coincide with a natural and apparently gradual evoution of the Mousterian stone industry into the lithic types of the Aurinnacian. Here alone there would seem to be no pronounced breag. The chapter on Paleolithic art, beside the descriptive text, includes admirable classified lists of the various subjects, and the sites where they are portrayed.

The second volume, dealing with the transitional industries and the Neolithic, Bronze, and Iron ages, is of necessity limited to a very sketchy and general treatment. When man ceased to be dependent on hunting animals for food, and herded and pastured them instead, when he learned to supplement this food supply with cultivated plants, he bound himself as never before to a settled habitation. And thus, from the comparatively homogeneous culture of the Old Stone Age there developed numerous local phases during the succeeding ages of Polished Stone, of Bronze, and of Iron, each with strongly marked characteristics and following its own line of evolution, which makes the task of synchronizing them a difficult one. Moreover the cultural and skeletal material for these periods is so abundant as to demand many volumes for even a brief description. Professor

MacCurdy has achieved a brilliant success in effecting the necessary condensation, and nevertheless contriving to present the most important features of man's industrial and social evolution from the close of the Old Stone Age on to the dawn of history. These offer problems of interpretation quite as perplexing as any found in the earlier stages, as, for instance, the designs from Gavr'inis and the Table des Marchands pictured in figures 301 and 302, which Mac Curdy takes for representations of a hafted ax, and a shield ornamented with ax handles. Other observers see in the design from Gavr'inis a primitive plow, and explain the groups of "ax handles" on the supporting stone of the Table des Marchands as conventionalized blades of wheat. The latter view is somewhat helped by the fact that a disk with rays, supposed to represent the sun, is indicated in the middle of the "wheat stalks." This does not appear in MacCurdy's figure reproduced from de Mortillet, but is clearly seen in a photograph of the same stone by le Rouzic (1910). A few phrases, such as the "prow lines of the stern," or "some rodent, probably the marten" are obviously oversights such as will at times escape the vigilance of author and editor and slip into the best regulated book.

To sum up: Professor MacCurdy's account of prehistoric man does not always make clear the part that rests upon indisputable evidence, and the part where the insufficient evidence has been pieced with hypothesis and conjecture. In this respect it will present grave difficulties to beginners in prehistory, not yet familiar with the nature of the supporting evidence. On the other hand, the exceptionally ample and accurate lists and classifications of sites given throughout the text and in the appendices are invaluable, not only to beginners but to everyone who has occasion to verify localities or references.

No report on *Human Origins* would be adequate that failed to do justice to the extraordinarily sympathetic comprehension with which Professor MacCurdy pictures some of the salient features of man's early development. Take, for instance, this passage from his chapter on Paleolithic art:

> From the standpoint of priority of antiquity then, the artist has special reason to be proud. He follows a calling that had its worthy devotees ages before any other method of leaving imperishable records of human thought was known. Man was artist before he was the maker of even hieroglyphs; he tamed his imagination and his hand to produce at will objects of beauty long ages before he tamed the first wild beast or made the humble plant world

do his bidding. The farmer, whose calling we are apt to think of as representing the life primeval, is a mere upstart in comparison with one who practices the fine arts.

Both Professor MacCurdy and the readers of "Human Origins" are to be congratulated on this new, vivid, and scholarly reconstruction of the life and environment of prehistoric man.

C. D. MATTHEW

Medicine, Magic and Religion. (The Fitz Patrick Lectures delivered before The Royal College of Physicians of London in 1915 and 1916.) W. H. R. RIVERS. With a preface by G. ELLIOT SMITH. New York: Harcourt, Brace and Company, 1924. VIII, 147 pp.

The major part of this little book presents a history of primitive and early medicine. It shows the late Doctor Rivers at his best, and we must all feel indebted to his literary executor, Professor Elliot Smith, for having rescued these fugitive essays and made them generally accessible. So far as I know, this is the only serious attempt to characterize the major areas of the globe with reference to theories of disease and the correlated practices. A pioneer effort of this sort is bound to err on particular points, but Rivers's sketch remains a highly creditable undertaking.

The most serious mistake I have noted relates to the distribution of the belief in soul-kidnapping as the cause of illness. Rivers thinks that it is limited to Indonesia, Papuo-Melanesia, and America, with traces in West Africa, but writes: "We do not know of it in Asia . . . ." (p. 79). The fact is that it is prominent among the Chukchi; and likewise, I learn from Doctor Sternberg, among Mongolic and Turkic peoples. In view of Doctor Rivers's implicit rather than expressed tendency to connect American and Indonesian culture, the *continuous* distribution of the trait on both sides of Bering Strait is a phenomenon of considerable significance. In general, Doctor Rivers's exposition of most points in this book is characterized by commendable restraint, though the very formulation of certain questions—for instance, as to the single or multiple origin of Four as a sacred number (p. 88)—indicates his sympathies.

The distribution of the sweat-bath in Melanesia, New Guinea, Polynesia, Africa and America, as well as in Northern Europe, (p. 102) is certainly highly suggestive and merits closer study. It may be worth pointing out that the sweat-bath is not always a *vapor*-bath in America, as Doctor Rivers seems to assume. Altogether the treatise suggests many special inquiries of ethnographic interest and contains much valuable detail on the Oceanian area with which the author was particularly conversant.

ROBERT H. LOWIE

AMERICA

The North American Indian. EDWARD S. CURTIS. Volume XII: The Hopi. 1922.

Among all the voluminous ethnographical literature concerning the Hopi there has been till now no orderly survey of their complex culture. It has been the simplest things about their life that one learned last of all, accidentally usually in the mass of specialized ceremonial detail. It is only with the publication of the latest volume of this series sponsored by J. Pierpont Morgan, *The Hopi*, that this is ended. The book is a clear and observant record of the various aspects of their life.

It is of course as beautiful a volume as our libraries boast, and one that is written lucidly and with competence. From an anthropological point of view it performs two major services: it is, first, that much needed summary of a Pueblo culture, the only one that has ever been done that will serve as an introduction to their habits of thought and is yet of such completeness as to be ethnographically of value; second, it contains a very considerable amount of new or variant material of comparative interest.

As a summary of a Pueblo life it is as successful as a strictly descriptive book well might be. The account of the katcina cult, for example, (pp. 170-177) with the generalized description of procedure and its intimate association with the kivas, is admirable. It is just such an account as a sympathetic and intelligent inquirer has need of. The shortcomings of the book as an introduction to Pueblo life arise as a defect of its virtue, for it is wholly descriptive, and it does not make any attempt other than lucidity of statement to guide the student through the unaccustomed mazes. It would have made the large patterns of their culture clearer to set off the katcina cult, for example, somewhat definitely from their other fraternity-organized activities of curing and weather-control; and it would be helpful to find an analysis of the various organizations of the kiva, and the fraternity, and the clan in their several functions in everyday life. Such a plotting of distinct activities and thought-patterns is outside the scope of the book.

This straightforward setting down of information, on the other hand, makes the ethnographical information exceedingly easy to use as comparative material. The account of his initiation by the only surviving member of the Poswimi, the extinct curing-society of medicine-men, fills an important gap in the so-far recorded material. This society was made up of a very small number of initiated medicine-men who met at the time of the winter solstice ceremony, "looked through people" in the performing of their cures, and initiated by clapping a crystal "heart" into the breast of the initiate. The likeness to the practices of Zuñi and eastern Southwest curing societies is borne out also in the choir of five who sang for them at their ceremonies. Some relative of the newly-initiated medicine-man was supposed to die in consequence of his initiation.

The clan data presumably refer to Walpi alone, and in view of the wide discrepancies in the various pueblos, it would have been helpful to have had it specifically assigned to this village. The date at which it was collected would also have been valuable, for Mr. Curtis and Mr. Myers made their first trip to Hopi in 1900, and have gathered material at intervals ever since. We have the list published by Dr. Fewkes in 1900, and a recent unpublished list of Dr. Parsons, and a comparison of the three emphasizes the stability of the native groupings of the linked clans. In all three lists there are some singly-mentioned variants that do not occur in the others, but the main alignment into twelve groups of linked clans is stable. The main divergence of the Curtis list from both others is its omission, for the Bear group, of the usual linked Bluebird-Spider group, and the substitution of Hemlock.

Hopi proper names are clan-owned, but they are not the property of the clan of the man or woman who bears the name, but of the clan of the man or woman who bestowed it. Curtis has included a valuable list of 120 names with their translation and clan-ownership, and the clan affiliations of the person who bears the name, both on his father's and his mother's side. The majority of the names are given by the father's clan, and in some groups this is overwhelming. Of twenty-eight names owned in the Tobacco-Rabbit clan, twenty-six are borne by children of Tobacco men. Nevertheless in a total of 120 names recorded, only 77 are borne by "children of the clan." In Sichumovi, at least, according to Dr. Parsons, the person bestowing the name is the ceremonial father who takes the child through the Powamu whippings, and initiates him into his own New Fire Society. If this is true also in Walpi, it will give a valuable indication of the relative frequency of different methods of affiliation with these societies. It seems that in Hopi theory the ceremonial father is from the maternal household of the father, but we know also that a sick child may be "given" to a person of unnamed affiliation to be initiated by him, if the child is cured, into the New Fire society of which he is a member. The trespass initiation is recorded also. The bearing of all these upon the clan-owned name should be enlightening.

This table of clan names is recorded in connection with a genealogy of 221 names, which was used in the gathering of kinship terms. Not only the use of these which accords with native theory is given, but also the secondary applications as shown by the terms which were applied to each other by the persons in the genealogy.

Confirmation is given of the practice of removing the fangs from snakes before the Snake dance. The method is that described in the confessions owned by the American Museum of Natural History. As a whole the descriptions of ceremonial are valuable as introductions, rather than as adding to already known detail. Some things of considerable significance escaped the attention of the authors, such as the clan basis of organization for the winter solstice ceremony.

The volume contains also valuable mythological material. The clan myths, compared with those already published and with Miss Ruth Bunzel's manuscript, are in their diversity of incident a self-sufficient rebuttal of their historicity. Among the incidents of the other tales never before recorded for the Hopi is the omnipresent Pueblo story of the marriage-test in which the fine-ground meal must adhere to a polished shell; and a well-acculturated variant of the northern incident of compassing your enemy's death by a contest in swinging from a tree that snaps back with great force.

All anthropologists are under a debt to Mr. Curtis and Mr. Myers for this volume, and we must regret that it is so rare and precious a book as not to be available for ready use. It should be accessible not only to anthropologists, but to their students, and to all who are interested in a complex and integrated culture.

RUTH F. BENEDICT

Shoshone Folk Lore. SARAH EMILIA OLDEN. Morehouse Publishing Co., Milwaukee, Wis.

The hopes that are legitimately raised by this title are not even known to the author. It contains no folk-lore and its desultory observations on Indians and missions are poorly reported.

R. F. B.

An Introduction to the Study of the Southwestern Archaeology. Papers of the Southwestern Expedition No. 1, New Haven, 1924. A. V. KIDDER.

Dr. Kidder's book is a vivid reminder of the progress which has been made in the archeology of the Southwest during the last fifteen or twenty years. The foundation for this work was laid somewhat earlier by Bandelier, who during the years 1880-1886 explored the Southwest for the Archeological Institute of America. The Hemmingway Expedition to the lower Salt River was made in 1887-8. The Mindeleffs, Mr. Pepper, and Dr. Fewkes did much pioneer work. The new era, however, began with Dr. Kidder and Mr. Nelson in the Rio Grande region. The first main problem was to separate geographical variations from historical sequences, and chiefly on the basis of pottery. Dr. Kidder obtained noticeable results in the Pajarito region and Mr. Nelson worked out the first satisfactory sequence in the Galisteo Valley. Later both these men covered practically the whole of the Southwest. In time it is probable that both would have presented pretty complete solutions of the development of culture in this region if circumstances had not diverted Mr. Nelson to other problems. To the aid of these pioneers came Earl H. Morris in the San Juan region, Leslie Spier in the Little Colorado, and Neil M. Judd in the Chaco Canyon. Working more or less with Dr. Kidder, Guernsey made important contributions in the region of northern Arizona and southern Utah.

The results of this work are presented in this preliminary publication of a series that will deal in particular with the excavations at Pecos. The first part gives the available history of Pecos beginning with the Coronado Expedition in 1540 and following the course of events until the village was abandoned in 1838. Part Two gives an account of the excavations at Pecos for Phillips Academy continuing through the six seasons from 1915 to 1922 (1918 and 1919 being omitted because of the war). Part Three begins with a concise description of the modern pueblos and then takes up the prehistoric ones in geographical order: the San Juan, Northern Peripheral District, the Little Colorado, the Upper Gila, the Mimbres, the Lower Gila, the Chihuahua Basin. The architecture and pottery of each province are described and characterized with interesting comparisons especially as to contemporaneity. These presentations are greatly aided by the numerous illustrations and maps. The well-selected series of pottery designs in particular make comparisons easy.

It is in the San Juan region that historical sequences are particularly well worked out. The distinctions between Basket Maker, Post Basket Maker, Pre-Pueblo, and Pueblo are now pretty well determined for dwellings, clothing—especially sandals—and pottery. The Pueblo period is probably susceptible of historical subdivision but here there is still some confusion between local variations and time sequences. The main differences between Mesa Verde and Chaco Canyon are certainly for the most part local. It is this determining of sequences by careful observations and analyses that crowns the archeological work in the Southwest. This is at the same time brilliant and accurate. It is also a fine example of cooperative effort. There has been constant consultation between the various workers in the field with a frank sharing of new facts and theories. Petty jealousies are conspicuous by their absence.

Besides the San Juan and Rio Grande regions in which the main historical results have been obtained notable work has been done in the Little Colorado; Kroeber, Nelson, and Spier have made general surveys. Spier by clever analysis has been able to determine the order in time in which the various ruins in the neighborhood of Zuni were inhabited. Mr. F. W. Hodge during his excavation of Hawikuh for the Museum of the American Indian Heye Foundation has been able to trace back from historical times the changes in pottery, burial customs, etc.

To the south very little is known. Museums have collections of fine pottery from the Upper Gila and Mimbres Valleys but information as to these regions is very scanty. From the lower Gila and Salt Rivers both specimens and facts are few. The Peabody Museum at Harvard has the results of the Hemmingway Expedition concerning which the publications were meagre. This region should prove a fruitful field because it lies along one of the roads to Mexico, and may have received early influences from the South.

Part Four is devoted to conclusions. Dr. Kidder sketches historical changes from a postulated non-agricultural, nomadic people to the highly concentrated community life represented in Chaco Canyon and the Pajarito plateau. He leans toward the pressure of alien tribes from the north and east for an explanation of this concentration of population and the final abandonment of large areas. There are no evidences of any considerable changes in the rainfall or climate of the Southwest. It may be more stress should be put upon the economic advantages of community life and the advancing knowledge of agriculture which led to the irrigation of the less elevated regions in the place of isolated dry farming in the mountain valleys. The changes in historical times were due to the raids of non-pueblo peoples and it is sound to postulate the same cause for more remote movements. The penetration of the Navajo in the north and the Apache in the south may well explain the deserted ruins in Chaco Canyon and the upper Gila.

The making of time estimates by Dr. Kidder and others for prehistoric events in the Southwest seem to me hardly justified. There is at present no basis for a reckoning in years. The assumption that the development of American culture and the great linguistic variation in the two continents have resulted since the retreat of the last ice cap far enough to open a road across Behring Sea is untenable. The ruins of Mexico Valley, the Maya region and the Andes may be recent, but beneath all these lies the long upward struggle of the beginning of agriculture and the arts.

The book is most welcome for the summary of Southwestern archaeology which it furnishes. It should stimulate further work of the same sort in the less well known portions of the Southwest and then the cry should be: "on to the South." What lies between the pueblos and the Valley of Mexico? Even without historical records it will eventually be possible to write a fairly full account of what has happened to man in America.

P. E. Goddard

The Art of Old Peru. Edited by Walter Lehmann, assisted by Heinrich Doering. Publication of the Ethnological Institute of the Ethnographical Museum, Berlin. English Translation published by E. Weyhe, New York, 1924.

Among the several sumptuous albums devoted to Peruvian art which have appeared within the last few years, none is more magnificent than the present work, a quarto volume of quasi-de-luxe appearance consisting of twelve colored and one hundred and twenty-eight collotype quarto plates, sixty-three half-tone text figures and sixty-eight pages of text, admirably printed on excellent paper. The text consists principally of a twenty-eight page paper on "Historical Survey," with four pages of notes by Dr. Lehmann and a fifteen page paper on "Land, People and Monuments" by Dr. Doering. Titles, preface, map, list of plates and bibliography account for the other twenty-one pages. Two large chronological tables complete the total.

It is primarily as an album of choice examples of Peruvian art that this publication lays claim to the interest of students of American art and archeology, and on this score alone it deserves a place in the library of each. Its value is enhanced to the latter because of the fact that most of the specimens figured have never before been published, the majority of them pertaining to the famous Gaffron private collection.

> More than half of the plates, both of tapestry and pottery, have been taken from pieces of the choice Gaffron private collection in Schlachtensee. All the photographs from this collection show pieces which up to now have nowhere else been published. Similarly the great majority of the pieces from the rich collections in the museums in Berlin, Munich, New York and London are reproduced here for the first time in large plates. (p. 56.)

The majority of the rest of the plates are from specimens in Germany, and other private collections, such as the Sutorius collection of Stuttgart, are well represented, thus affording a wealth of hitherto unpublished material to students on this side of the water. All of the color plates, which illustrate mainly textiles, are from the Gaffron Collection. The colors are admirably reproduced, and one cannot but regret that the great expense involved prohibited the reproduction of at least all the textiles in this form. In view of the enormous amount of suitable and available Peruvian material, the editor has done well to select principally specimens never before figured.

> In the present work an attempt is made to choose from the wealth of the antiquities of Peru, pieces of different periods and cultural spheres which are artistically important as well as archeologically significant. In this way, not only the narrow circle of specialists, but also all friends of true art, will be able to receive a living impression of the abundance, the individuality and the high quality of the creations of the spirit of Ancient Peru. (Preface, p. 5.)

The editor has apparently been most successful in his choice, though doubtless every Peruvianist will regret the omission of certain favorite pieces. Practically all the plates are devoted to pottery, textile, stone, wood and metal objects, only one-ninth picturing architecture. In several instances, obviously with the purpose of figuring the object as large as possible, the photograph has been trimmed too close and a better artistic effect would have been secured by illustrating the entire object with suitable margin. The editor's penchant for Nazca pottery is evidenced by his selection of thirty-six pieces of Nazca ware as against, for instance, four from Ica, a preponderance hardly justified on either artistic or archeological grounds. Chancay and Ancon are similarly slighted, but with more justification. One misses on the map the locations of the proveniences of several specimens figured, such as Ancon.

A few minor errors in numbering and translation mar the otherwise excellent effect. The error in numbering plates 5 to 10 is noted in an accompanying erratum slip, but other errors in referring to "upper, lower, right, left" may be confusing to the conscientious reader. The animals figured on plates 46, 50 and 62, obviously frogs or toads, are termed "tortoise," possibly a mistranslation from the German.

The two accompanying papers by Lehmann and Doering are of an importance secondary to the plates and of interest principally to archeologists. Both are on the whole excellently translated with relatively few instances of stilted construction or poor choice of words. The translator should have been among those named and thanked in the preface.

Dr. Doering approaches the topic from the viewpoint of the artist. He analyzes the temperaments and peculiarities of the art of the several regions and finds that they reflect characteristics of climatic environment, the art of the torrid coast being imaginative and temperamental, that of the Aimara of lofty Tiahuanaco cold, restrained and impassionate, that of the Incas of Cuzco intermediate in temperament as in location, moderate, conservative and noble. In the massive regular Inca architecture he sees the embodiment and manifestation of the Inca state. He finds more individuality on the north coast, more conventionalization on the south coast.

Dr. Lehmann's "Historical Survey" is of interest to the archeologist rather than to the artist, though he also analyzes the spirit and nature of the artistic forms of the various regions and culture levels, but rather from the historical standpoint than as the manifestation of national psychology. The artist unfamiliar with the topic of early America will find the paper a mine of information on pre-Columbian American historical relations, if a little confusing since the mass of material is poorly organized and unsystematic. It breathes the enthusiasm and vivid interest of the author. The Peruvian specialist also will find in it a tremendous fund of suggestion, more or less valuable. The article hardly pretends to be a properly developed scientific monograph, and the author does not attempt to prove any thesis, merely drawing on his great fund of knowledge of American archeology, and noting resemblances with every part of America on every possible topic. Some of the resemblances and analogies thus pointed out will not be accepted as valid by conservative archeologists, but they have their value as suggestions for consideration. They are too numerous to select and comment upon in particular. A large part of the paper, concerning the prehistoric relations of Mexico and Central America, while of great interest, seems hardly in place in a work on Peruvian Art.

The footnotes are many and full, but an unfortunate error in references destroys the correlation of footnotes 24 to 45, leading to the greatest confusion. The absence of references in text to plates and figures is also a lamentable omission.

Two tables of chronology complete Lehmann's text. Table A attempts a correlation of epochs, forms of thought, artistic styles and representative tribes and peoples. It is a valuable piece of work, one of the best of several such chronological tables which have been published by Peruvianists in the last few years. While accurate stratigraphical researches in Peru are still pitiably few and one of the great desiderata of American archeology, yet sufficient detailed studies have now been made to render the preparation of such chronological tables no longer premature but rather distinctly welcome as tentative hypotheses for discussion. The actual dates in terms of years given in the present table are well within possibility, but any assignment of actual dates on such slight evidence as Peruvian archeology offers at present is an attempt at which more conservative students have heretofore hesitated.

Table B is larger, fuller and more complex, a rather daring temporal and geographical cross-section of the entire field of Latin-American archeology from the Toltecs and Huaxtecs to the Calchaqui, involving considerations of language, artefacts, artistic styles, migrations, traditions and mythology. While the many suggestive resemblances, culled from the author's unexcelled fund of knowledge of Latin-American archeology, are highly inspiring, the table as a whole suffers from over-complexity and would have been more impressive if the field of research had been more restricted. As before, the dates are reasonably conservative, and the table as a whole probably as good and complete as the all-too-meager data permit.

"The Art of Old Peru" is a work primarily for artists and students of primitive art, but of maximum importance as well to archeologists, both because of its wealth of otherwise unpublished objects and of suggestive discussion.

J. Alden Mason

ASIA

The Panchatantra Reconstructed. F. Edgerton. American Oriental Series, vols. 2 and 3. American Oriental Society: New Haven, Connecticut, 1924. 408 and 405 pp.

The purpose of this work is to reconstruct the parent work from which are derived those collections of tales known as the Tantrākhyāyika, the Hitopadesa, the Kathāsaritsāgara, and the rest. The method is essentially the same as is pursued in collating manuscripts; there is this difference, however, that the derivatives do not strive to reproduce word for word the lost original; they retell and rearrange the original to suit the editor's taste. The author may follow the original fairly closely, or he may, like Somadeva, turn the whole into verse and retain only the substance. It is not therefore merely a question of eliminating clerical errors; but of determining what parts the existing tales reproduce verbally from the original, and what parts have been rewritten.

To this task Prof. Edgerton has brought a stupendous industry. He has compared every sentence of his ten derivatives, and further has had to collate the various manuscripts of the same derivative in order to establish his text. This minute analysis has not, however, impaired his judgment and he frankly admits that his reconstruction is only approximate. How approximate is clearly shown by the use of italics and brackets. The italics "indicate matter of which we cannot be sure that it literally corresponds to the original text." When we consider the amount of italics, often whole pages together, with a sprinkling of certainties, one cannot help wondering whether the result justifies the enormous effort. In scholarship we must keep the end steadily in view. The author does indeed seek to justify his labours by pleading that "it must be worth while to recreate the original form of a work that has enjoyed such enormous popularity." To recreate it with certainty, perhaps; but since the exact text is largely doubtful the reconstruction will never be used as an authority; it is not likely ever to be quoted in support of historical studies; the existing derivatives will always be referred to because they are books that were actually written. Even if a certain reconstruction were possible it would scarcely possess the interest that would attach to a reconstruction of the original Mahabharata or Ramayana. The author is prepared to admit that the original work was as late as the fifth century and not earlier than the Christian era. The interval separating it from its derivatives is not so great as to make a profound difference in the opinions and customs of the times. In point of fact we shall find that the variations bear on words and phrases rather than on ideas that interest the student of customs. This is not to be wondered at since animal fables are singularly poor in information about customs, and I doubt whether the student could cull from Aesop or La Fontaine anything which he could not gather in less time and more fully elsewhere.

The translation makes excellent reading; in fact it might be criticized for making better reading than the original. The author has aimed at lightening the style, but in so doing destroys one of the characteristics of the classical Sanskrit, its fondness for interminable compound adjectives; they express what the best ages of any literature would put into a separate sentence, if they did not omit it altogether. By making them into separate sentences the author gives the reader who does not know Sanskrit the impression that the original was much more natural and popular than it really was. For instance paragraph 2 on page 271 appears in the translation as four sentences; but in the original it is only one, the last three sentences of the translation representing as many compound adjectives, one of them consisting of twenty-seven syllables!

By an awkward convention in the text contracted vowels are shown by the same sign as an elision. Thus *ceti*, for *ca iti*, is written *ce'ti*, as if the first *i* were elided, whereas it has fused with *a* into *e*. Contraction could more suitably have been expressed by a circumflex.

The orthography is modernized: *enuf* for *enough*, *huskt* for *husked*, *thru* for *through*, to all of which no exception can be taken, but one would expect *thot* to rhyme with *not*.

The type and general get-up are excellent.

A. M. HOCART

ANURADHAPURA, CEYLON.

Growth of Chinese. S. M. SHIROKOGOROFF and V. B. APPLETON. Reprinted from The China Medical Journal, May, 1924. 14 pp., 4 tables, 6 figs.

These observations on weight and stature of more than a thousand Chinese children of the Eastern Provinces are a distinct addition to the scanty data from China. Averages with maximum and minimum instances in each age class are given. It is of importance to have some other expression of variability as well, or the seriations for each age from which these might be calculated, but these are not included. I have calculated the following increments and rates of growth.

Age	INCREMENT				RATE OF GROWTH			
	Male		*Females*		*Males*		*Females*	
	Weight (Pounds)	Stature (Inches)	Weight (Pounds)	Stature (Inches)	Weight (Percent)	Stature (Percent)	Weight (Percent)	Stature (Percent)
3	3.98	3.14	4.32	2.97	14.7	9.3	17.1	9.0
4	3.16	1.62	1.10	1.63	10.2	4.4	3.7	4.5
5	3.24	3.23	4.86	3.08	9.5	8.4	15.8	8.2
6	2.59	2.17	1.96	1.40	6.9	5.2	5.5	3.4
7	4.37	1.50	3.19	1.73	10.9	3.4	8.5	4.1
8	4.89	2.49	4.29	1.84	11.0	5.5	10.5	4.2
9	5.20	2.39	4.41	2.69	10.6	5.0	9.8	5.9
10	5.15	2.27	4.74	1.34	9.3	4.5	9.6	2.8
11	3.95	1.70	7.55	3.71	6.6	3.2	14.0	7.5
12	8.58	2.25	6.69	1.87	13.5	4.1	10.8	3.5
13	5.37	1.20	9.14	2.00	7.4	2.1	13.4	3.6
14	3.71	2.97	9.40	1.95	4.8	5.1	12.1	3.4
15	8.13	1.43	4.75	−0.30	8.9	2.4	5.5	0.5
16	10.08	0.24	0.03	1.03	10.2	0.4	0.0	1.8
17	−2.03	1.15	−0.26	−1.82	−1.9	1.8	−0.3	−3.0
18	5.84	0.15			5.4	0.2		
19	0.29	0.75			0.3	1.2		

The values are quite irregular, but suggest that growth in weight is slight after the seventeenth year in males and after the sixteenth year in females, with a similar phenomenon in stature beginning a year earlier in both cases. I cannot agree with the authors that the ages 6 to 15 are "critical periods" for stature of males at which the rate of growth changes. The linear equations for the growth curves, and the maxima and minima for each age class calculated from these, which the authors add, do not give any insight into the phenomena.

LESLIE SPIER

The Primitive Culture of India. Colonel T. C. HODSON. James Furlong Fund, vol. 1, pp. 1-133. London: The Royal Asiatic Society, 1922.

This book contains a series of five lectures delivered by Colonel T. C. Hodson at the School of Oriental Studies, University of London, in the year 1922. So small a book, dealing as it does with the cultural expression of millions of people spread over a territory of considerable extent and environmental variation, is bound to be a generalization. Almost every phase of material and immaterial culture is touched upon. Agricultural methods, metallurgy, pottery-making, wood and stone-working, fire-making, dress, dwellings, linguistics, myths, taboos, education, kinship systems, marriage regulations, ceremonies, cosmogonic beliefs, the life-cycle,—all these and their related topics are mentioned. In describing these features the author refers to the practices of various tribal groups in Upper Burma, Northern and Southern India, in Ceylon and in the Andaman Islands.

At no time are we told just what tribes have a specific custom for the author is not interested in cultural distributions or relationships. Though he admits that there are gradations within the "lower culture" he makes no differentiation in cultural status between those tribes that practice terrace farming or jhumning and those that have no planting at all but live on products of the jungle, by hunting and fishing. Similarly as regards other elements of material culture,—the people that use metals, those that have only stone or wooden implements, those wearing no clothing and those dressing elaborately, those erecting leaf shelters and those constructing plank houses, rambling forest dwellers and gregarious citizens,—all fall in the stratum of civilization termed primitive.

What, then, is its distinguishing feature? According to Colonel Hodson primitiveness is a matter of mentality not of culture. The latter, while preserving some of its ancient characteristics, suffers from contact with modern civilization and loses thereby the pristine quality which he believes adheres to the former. His evidence for this is the fact that in spite of native cultural achievements and the immediate presence of European civilization the peoples here dealt with still subscribe to the following practices,—assiduously adhering to tradition, permitting psychic experiences such as dreams and hallucinations to influence actual conduct, rationalizing custom, using concrete rather than abstract terms, crediting fantastic origin myths and believing in specific reincarnation. These are Colonel Hodson's criteria of primitive mentality.

The references from topic to literature are profuse which make the little book of value as an indicator of available sources on Indian and Burmese ethnology.

A. H. GAYTON

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DISCUSSION AND CORRESPONDENCE

Marquesan Culture

In a recent number of the *American Anthropologist* there appeared a review of my publication on Marquesan material culture in which I am severely criticized both for my conclusions in regard to racial movements in Polynesia, and for the methods by which they were reached. The reviewer lays great stress on the scantiness of the data available for comparative study, claims that I have ignored diffusion as an explanation of cultural similarities, and makes a general attack on my theory of Polynesian migrations, questioning the existence of distinct racial or cultural types within the region and accusing me of treating race and culture as a necessary unit.

I agree with the reviewer as to the scantiness of the data available for the Cook, Austral and Tuamotu groups and, to a lesser degree, for Tonga. Hawaii, New Zealand, Easter Island, the Marquesas and Samoa, on the other hand, are fairly well known and we have a number of good early accounts of the Society group. Although the data on these localities are incomplete, they seem sufficient to justify certain broad general conclusions as to cultural and racial relationships.

The claim that I have ignored diffusion as an element in the development of Polynesian cultures and as an explanation of similarities may be disproved by a few quotations from my publication:

> Western Polynesia was exposed to influences from both Micronesia and Melanesia. There is known to have been considerable contact between Samoa and the Gilbert Islands; and both Samoa and Tonga have been strongly influenced by Fiji. (p. 448.)
>
> The Samoan and Tongan cultures.... may be considered as developments of a single comparatively simple culture which has been modified by borrowing from several sources, (p. 461).

On p. 458 I list a number of traits of Samoan and Tongan culture which I believe to be of Fijian origin. Although diffusion has no doubt been of great importance in shaping the cultures of the relatively close-lying islands of western and central Polynesia, its influence must have been reduced to a minimum in the marginal groups.

Such localities as Hawaii, New Zealand, and especially Easter Island, were separated from their nearest neighbors by a thousand or more miles of open sea and there are no indications that they had any regular intercourse with the rest of Polynesia. The number of purely local features occurring in their cultures would, in itself, indicate a long period of practically independent development. They were no doubt reached by occasional voyagers and castaways, and in both Hawaii and New Zealand we have legends of immigrations subsequent to the first settlement, but their contacts with the outside world must have been few and far between.

The reviewer apparently assumes that the Polynesians are basically homogeneous in race and culture and says (p. 548):

> A fair consideration of cultural diffusion would tend to remove any necessity for the long series of migrations of distinct racial units bearing respectively distinct cultural traits. . . . . If here be any strong evidence of such waves of racial immigration into Polynesia, well and good.

Recent studies of Polynesian physical type, summarized on p. 447 of my publication, seem to prove conclusively that at least three races are present in the region. Sullivan believes that the two non-Negroid stocks were relatively pure at the time of their arrival and says:[1]

> From the frequency and distribution of these two quite distinct physical types it is clear that they must have entered Polynesia at different times and possibly by different routes. Most probably they had different languages and cultures.

The Negroid element is stronger in Easter Island than in any other Polynesian locality,[2] and it seems improbable that any race which reached Polynesia only as an inclusion in some other stock should have been carried to this remote outpost in sufficient strength to become dominant there. The absence in Tonga of traditional or archaeological evidence of an early Negroid population is at least counterbalanced by the Tahitian legends of contact with dark-skinned aborigines and by the finding there of stone implements of Melanesian type which differ considerably from any of those known to have been used by the historic inhabitants. I believe that, until we have much clearer evidence to the contrary, we are justified in assuming that each of the three races present in Polynesia entered the region at a different time. As any people capable of colonizing the region must have been relatively advanced in culture, it seems probable that each of these immigrant races brought with it certain distinctive cultural features.

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[1] Sullivan, Louis R., New Light on the Races of Polynesia, Asia, January, 1923 p. 19.

[2] Routledge, K., The Mystery of Easter Island, London, 1920, 295f.

The evidence for the existence of distinct types of culture within Polynesia has been presented in tabular form on pp. 449-457 of my publication and can not be repeated here. There are a number of cultural traits such as the fire plow, earth oven, digging-stick, bark cloth, etc., which are common to practically the whole of Polynesia. Many of these are also present in Micronesia, Melanesia, and even southeastern Asia. There are also a great number of traits which are limited to single islands or groups. Between these two extremes, however, there are certain groups of linked traits which show a definitely limited geographic distribution. These appear to me to be numerous enough to justify a division of Polynesian cultures into types comparable in a general way to the culture areas of continental regions. I do not claim that the cultures which I place in each type are uniform in all respects or that the various types differ in all particulars.

The almost complete isolation of the marginal groups favored the survival in each of them of the physical type and culture of its original settlers, except in so far as these were modified by independent development or later migrations. Gradual interchanges of blood and culture, such as that which went on between Tonga and Fiji, were not altogether precluded, but contacts were so infrequent that many centuries would have been required to bring about important changes in either by this means alone. The distribution of the various racial types in Polynesia as worked out by Dixon[3] shows a remarkably close agreement with that of certain cultural traits as worked out by myself, although the two investigations were carried on quite independently. In view of the peculiar geographic conditions it seems easier to explain this phenomenon by a theory of culture bearing migrations than by any other. The reviewer's statement that

> every important Polynesian cultural trait is definitely linked with a peculiar racial element which is credited with personally introducing that trait into every province where it is found, (p. 544)

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[3] Dixon, Roland B., The Racial History of Man, New Nork, 1923.

goes far beyond my real claims. I have not attempted to ascribe any of the features of universal or purely local occurrence to the original culture of any of the racial groups present in Polynesia. I have also admitted the importance of diffusion in the western islands and have given, on p. 463, a number of traits which I believe to have originated in southeastern Polynesia and which I do not consider to be directly traceable to the original cultures of any of the races who settled in that region.

The reviewer especially criticizes my conclusion that cultures of the same general type as the Maori and Marquesan ones formerly existed in southeastern Polynesia. The resemblances of the Maori and Marquesan cultures are so numerous that I feel they cannot be accounted for by any theory of convergence. Many of their common traits are found nowhere else in Polynesia and there are also close similarities in terminology. For instance, the semi-sacred storehouse on posts, which seems to have been limited to these two localities, is called *pataka* in New Zealand and *fata'a* in the Marquesas. Direct contacts numerous enough to account for these resemblances were impossible because of the distance. Most of the historic Maori trace their descent from immigrants who traditionally came from Tahiti and the Cook group, and the Marquesans also were unquestionably in much closer touch with these localities than with New Zealand. Nevertheless, many of the traits in which the Maori and Marquesan cultures show the closest agreement are lacking, or at least very poorly developed, in the historic southeastern Polynesian cultures. We are forced to conclude either that such traits reached both the Marquesas and New Zealand from some unknown point, but failed to reach southeastern Polynesia, or that the Maori and Marquesan cultures represent marginal survivals of a type of culture which formerly existed in the intervening groups as well. The latter seems much more probable.

I am also criticized for my conclusion that the historic form of Hawaiian political organization was introduced into the group by immigrants from southeastern Polynesia. The Hawaiians have many traditions of a late migration from this region and ascribe to the newcomers not only the historic form of government but the introduction of human sacrifice, the enclosed temple (heiau) and the large vertical drum used in religious ceremonies. The political features resemble those of the Society group much more than they do those of either Samoa or Tonga, while the other features are all well developed in southeastern Polynesia but are, with the possible exception of human sacrifice, lacking in western Polynesia. Although traditional evidence must always be received with caution, the stories of late immigrations to both Hawaii and New Zealand are supported by much genealogical and other evidence and cannot be ignored in any theory of Polynesian origins.

R. LINTON

TWO POINTS OF WESTERN DÉNÉ ETHNOGRAPHY

The annual Reports of the Canadian Department of Mines contain what might be termed an Anthropological corner under the able direction of Dr. E. Sapir, of Ottawa. What struck me as a most probable ethnographical inaccuracy was to be found in that for 1923, in connection with Harlan I. Smith's field work and its results; but I did not then deem it of sufficient importance to warrant my sending any words of rectification on the matter to the *American Anthropologist.*

The last Report, that for 1924 just to hand, by a new and undoubted inaccuracy of the same nature, aggravates the first enough to render seasonable, if not necessary, a few lines on what I feel to be deficiencies in both documents. My silence to-day, after what I wrote thirty-five years ago[1] would be tantamount to formal disregard of the rights of ethnological lore.

First as to what is most likely an error in the former. Harlan I. Smith is represented, on the occasion of his work in the Bella Coola area of British Columbia, as finding there "Carrier specimens," and taking "60 Carrier photographs from Bella Coola, B. C." (pp. 28, 30). Elsewhere, the Bella Coola and Carrier Indians are coupled together in such a way as to leave the impression that they live, or lived, in close proximity to one another. So much so, indeed, that a pictograph which is extant on a certain rock cliff in the land of the former is claimed by the explorer to be due to the latter (p. 32).

May I be allowed to put on record my belief that the Déné tribe here pointed out is not that of the Carrier, but that of the Chilcotin (*Tsilkoh-'tinne*)?

The oldest known seat of the latter tribe, whence a large part of its members migrated less than a century ago to the bunch-grass covered valley and plateaus of the Chilcotin River, was Nakûnt'łûn, an important village to the northeast of the headwaters of the Bella Coola R., and not far therefrom. Before moving to the southeast, the Chilcotin of Nakûntł'ûn had very frequent intercourse with the Bella Coola Indians, whose valley they had only to descend in order to find themselves on salt water, and procure those items of civilized life imparted by the traders established there.

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[1] *Notes on the Western Dénés, ap.* Trans. of the Can. Institute, etc.

In fact, I feel I am warranted in saying that this commerce resulted in intermarriages which notably modified the dispositions of the Southern Déné now called Chilcotin, adding as they did to their psychological characteristics a boldness foreign to the genuine Déné, a modification which was repeated further north when the Babine of Rocher Déboulé, on the Bulkley R., came in contact with the Tsimshian tribe on the Skeena called the Kitksons or Gitksans.

I can personally vouch for the fact that this commixing of the Chilcotin with the natives of the Bella Coola region was kept up long after the emigration of the Nakûnt'lûn people towards the Fraser R. More or less wild young men—and they were not wanting in that tribe—would, especially after disreputable deeds, or in the case of difficulties with their folk—make it a point to repair thither, and sometimes live for years among the Bella Coola Indians.

The same can be said of no Carrier bands, the southernmost of which lived to the north and never saw Bella Coola Inlet.

As to the Chilcotin, on the contrary, their past history is often taken up with the recital of affrays with Coast Indians and, later on, with intruding whites hailing from the same quarters. Witness, for example, the 1864 massacre, when seventeen white men and the squaw of another fell at their hands in the valley of the Humałkoh.[2]

With respect to the habitat of the Bella Coola, it is not that the Carrier are too far away therefrom to have been physically unable to leave there something like those specimens of their culture mentioned by Harlan I. Smith. Yet their own territory, their hunting-grounds and fishing-spots, do not reach much to the south of Dean or Salmon R., and the whole topography of the country, a perfect sea of mountains and deep valleys lying, as a rule, to the westward (which I explored in 1884), precludes the idea of any body of Carrier being able to visit Bella Coola by land.

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[2] For a full account of this massacre and the causes that led to it, V. my *Primitive Tribes and Pioneer Traders*, p. 314 of third edition.

Nay, even the very name of the Atnarko River, in whose valley the would-be Carrier pictograph is said to be seen, tells its own tale. It is a Chilcotin, not a Carrier, word, evidently standing for Atna-ᴋoh, the river of the Foreigners. It would be Œtna-ᴋoh in Carrier and 'Qætnè-ᴋwah in Babine.

So much for Smith's pretended Carrier Indians, who are evidently nothing but unadulterated Chilcotin.

Now I hope that no one will be tempted to argue that the two tribes are so much alike that they can be taken one for the other. They differ widely in physique and dispositions, and their social organization is so unlike that the one follows matriarchate, while the other is governed by father-right. As to their respective languages, one may get a fair idea of their diversity by this little reminiscence. When stationed among the Chilcotin in 1882-85, I learned enough of their dialect to freely converse with them and catechize them without an interpreter. But when, in August of the latter year, I came in contact with the Carrier of Stuart Lake, I could not understand a word of what they were telling me.

In the Department of Mines Report for 1924, mention is made of "the Carrier Indians of Bulkley River in British Columbia" (p. 36); Mr. C. Marius Barbeau is shown continuing his investigations "among the Carriers of Hagwelgate" (p. 37), and Diamond Jenness appears as leaving for Hazelton, on the Skeena, "to carry out researches among the Western branch of the Carrier Indians resident in that vicinity" (*ibid.*), while, among the accessions to the Geological Museum of Ottawa, are shown "Carrier specimens from Hagwelgate" (p. 38) and Carrier photographs from Hazelton and Hagwelgate (*ibid.*).

But all those so-called Carrier are genuine Babines, members of a tribe, or sub-tribe, which, since the time of the first visit it received from D. W. Harmon, has always been considered a distinct ethnographical division. To understand this properly, one must appeal to the records of history no less than to sociology and philology.

In the first place, one should not forget that these appellations, Carrier and Babine, are due to the first traders who saw the aborigines thereby designated, and that these traders came from the east, not from the west or south.[3] Therefore, before they for the first time met the Carrier, Alexander Mackenzie and his French Canadian voyageurs had been told of them by the Rocky Mountain Sékanai among whom they first passed.

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[3] Cf. *Primitive Tribes*, etc., p. 34 *et seq.*

Now these Sékanai called their immediate Western neighbours *Arelne*, Carrier, from the custom of their widows to daily "carry" on their back the bones of their late husband whose remains had been cremated. These comprised the native inhabitants of Lakes Stuart, Tremblay, Tatla, Fraser and St. Mary's (Tsist'łatha), as well as the streams which connect them, and of the Upper Fraser and tributaries, as far south as the point which was to become Fort Alexander.

So far there was no question of the Babine, who were not discovered or named by the whites until some time after the establishment of Fort St. James in 1806.

Then the French Canadians in the employ of the North-West Company, who first saw them, were struck by the prominence of the lower lip of the women living on the banks of *Nato-pœn* (Babine Lake), a prominence which was due to the labret they wore, and for that reason called them Babine, or the Lippy ones.

That custom, which was absolutely unknown of the Carrier, they owed to the Western branch of their tribe—the "Carriers" of Dr. Sapir's Report—who hunted through the valley of the Bulkley R. and of parts of French and Cambie Lakes. These had in turn borrowed it from their immediate neighbours of Tsimshian parentage, the Kitksons of what is to-day called Hazelton.

Thus it will be seen that those pretended Carrier of the Bulkley are even more Babine than those whose habitat is the basin of the lake which now bears their name. Nay, they were for the Western Dénés the prototype of the Babine, and it would be the climax of inconsistency for an ethnographer to regard them as Carrier.

Of course, neither the lake or river Babine ever called themselves so. It is a well-known fact that in the same way as abstraction, though existing, is rare in the languages of the American Indians, even so they often lack the power of generalizing. They will have names for small ethnical groups, as a rule based on topography, but none for a tribe comprising several of these groups.

Thus it is that, as I wrote in 1892,[4] the Carrier know the lake Babine as *Nato'tenne*, people of Nato (who call themselves *Nitu'tinni*), and as *Hwotso'tenne*, people down by the current (*Hwotsu'tinni* in the dialect of the latter) the Babine of Bulkley River—the 1924 Report's would-be Carrier—who form together one and the same ethnological division.

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[4] *Notes on the W. Dénés*, p. 27

The latter half of the tribe, on the other hand, passed as *Akwilget*, or "well-dressed," among their Kitkson neighbours, and had never been called Carrier before the issue of last year's Canadian Report.

The particularity which was responsible for the name of Babine as applied to the inhabitants of Babine L. was to be found in an even more pronounced, or, at any rate, in an anterior, form among their congeners of the Bulkley valley, who had, indeed, taught it to the former.

As to the physical and psychological characteristics, as well as the language, of the two sections of the Babine tribe, they are identical, and I repeat that the lake aborigines became Babine only after their cousins of the Bulkley had given them the example of wearing the labret, which they owed to their heterogeneous neighbours on the Skeena.

A. G. Morice, O. M. I.

Taos Kinship Terminology

The following list of kinship terms were secured at the pueblo of Taos during the summer of 1924. The symbols used in transcription are: a, as in hat; ɑ, English broad a; ï, unrounded u; ϵ, open e; hl, surd l; th, strongly aspirated t.

Person, people: dai
Man: sïan (also "husband")
Old man: hluhli
Young man: hlϵ, hlahle
Boy: ïwiyu
Child, young, little, also son; also "old" as in "little old man": uu
Baby: fil
Woman: hliu
Wife: hlitu
Old woman: hliuu
Young girl: kwïl

Father: tɑm (vocative titta)
Mother: ka (vocative hlau)

Grandfather (on both sides): tα hluhli (See "old man")
Grandmother (paternal): αhlu
Grandmother (maternal): hlitu (see "woman," "wife," and "old woman")
Uncle (paternal): thuhluu
Uncle (maternal): mimi
Aunt (on both sides): iyamē
Elder brother: pαpα
Younger brother: bα̃iuu
Elder sister: tutu
Younger sister: bα̃yuu
Son: uu (same as child)
Daughter: fiu
Nephew or niece (on either side): kihlu
Grandchild: (of either sex): mαku
Father-in-law: mαku (same as grandchild; sometimes mαkutαm to avoid confusion)
Mother-in-law: mαku (same as grandchild; sometimes mαkuhliuu to avoid confusion)
Brother-in-law: tα (same as grandfather)
Sister-in-law: sĩai (compare sĩan, man, husband)

Jaime de Angulo

Notes on the Shell-heap at Whitmanville, Cape Cod, Massachusetts

The shell-heap with which these notes are concerned is one which has already been remarked by Chase in the Smithsonian Report of 1883. On his map it is the most southerly one at North Truro. It is situated somewhat north of Corn Hill, to the left of the railroad on the slope of a hill through which a cut was made. It lies opposite a rather deep depression, in which is a small fresh-water pond.

The examination of the shell-heap by Chase was cursory. In his report he only mentions its presence and the finding of two arrow- and spear-heads in the cut just north of the midden.

Mr. William S. Hart, one of the gang that made the cut, who still lives at Whitmanville, informed me that the hill was a cemetery for the Indians, since when the cut was being made portions of human skeletons and numerous stone implements were uncovered. It is evident that there was at one time a considerable Indian encampment located in the area described. It is the shell-heap, however, which attracted my attention.

The midden shows stratification. There are three distinct layers of shell débris. The bottom layer rests upon the native sandy soil. Between the bottom and the middle, and the middle and the top layers are strata of the so-called "black dirt" which in reality is ash and charred residues from fires. The thickness of the shell layers varies from the edge of the heap as thin and scattered to a thickness of from eight to ten inches as the center of the pile is approached. Owing to lack of facilities and time at my disposal I did not explore the entire area of the midden and can therefore give no estimate of its extent. In some places the shell-layers are almost a foot thick. The top layer is, at one place, about eighteen inches below the surface of the ground; at another place outcropping is evident.

The stratification of the midden indicates definitely that the spot had been used for the usual purpose on at least three occasions. It is consistent with the idea expressed by Gookin that the Indians of this region were migratory according to season rather than permanent inhabitants.

The shells found in the midden were of the type common to the region. There were many bones of small animals, both mammals and birds.

Many bone implements were found in the débris. They were browned with age and soft and crumbly. Some, however, were still remarkably solid and preservable. Fragments of arrow-heads, knives, spear-heads and other implements and weapons were abundant. Well-worked material was scanty. A stone pestle, a stone borer, several chisels and knives came to light. A large stone, which may well have been the head of a club, was found. It could hardly have been a hammer because its consistent smoothness was unmarred. There was also found a small slender stone of slate, on which could be detected fine scratches in a well-worn groove. This stone probably served as a sharpening instrument. The Indians of this region apparently used whatever stone material was handy for the fashioning of their necessary tools. The natural limitations of the local mineralogy made this imperative. Although cherts and flint are not native to the region, fragments of incompleted tools and much unformed matrix was found.

An interesting find was a number of sherds of pottery. These were apparently fragments of a vessel which had been broken and thrown on the fire. The pottery was made of clay and pounded shells. It was decorated with a crude design, which had been applied by a small triangular pointed instrument.

Insofar as these remains tell a story, they indicate that the cultural level of the particular tribe or tribes inhabiting this spot was not high. This is in accord with evidence from other sources.

The specimens which were collected from this shell-heap have been given to the Peabody Museum of Harvard University. My appreciation is due Professor Roland B. Dixon of Harvard for his interest and assistance in the examination and interpretation of the find.

FREDERICK S. HAMMETT

ANTHROPOLOGICAL NOTES

THREE NOTEWORTHY Publications of The Folk-Lore Society are now published by William Glaisher, Ltd., 265 High Holborn, London, W.C.I. These are Basil Hall Chamberlain's "Aino Folk-Tales," 1888; Walter Jekyll's "Jamaican Song and Story"; and Ann Callaway's "Religious System of the Amazulu," 1870.

THE RUSSIAN INFORMATION BUREAU announces that institutions, organizations or individuals who are interested in exchanging their scientific publications or periodicals for similar works produced by the scientists of the Soviet Union may make arrangements to do so by applying to its headquarters at 2819 Connecticut Avenue N. W., Washington, D. C. This Bureau represents the Joint Information Bureau of Moscow which because of its continuous communications with scientific and cultural institutions of the Union of Soviet Republics is able to arrange for the exchange of their publications for those of other countries and to establish permanent contacts mutually beneficious to those concerned.

KNUD RASMUSSEN, the Danish explorer, has been awarded the Charles P. Daly Gold Medal of the American Geographical Society for 1924, for his explorations in Greenland and northern North America.

THE FIELD MUSEUM OF NATURAL HISTORY announces the following anthropological and archaeological expeditions for the year 1925:

The museum has commissioned Dr. A. L. Kroeber to collect archeological material in Peru and Bolivia. Dr. Kroeber's initial researches will most likely beat Tiahuauaco, on Lake Titicaca, high in the mountains between Peru and Bolivia. Although the Spaniards found the Incas ruling this territory, it has since been agreed that their dynasty was a comparatively young one, probably originating in the fourteenth century. Incomplete investigations made by various institutions have disclosed much that is mythical regarding the pre-Incas races. Sufficient material evidence has been discovered, however, to prove that civilizations existed as long ago as 1,400 years before the Incas.

The archeological expedition in Mesopotamia, conducted jointly by the Field Museum and Oxford University, under the leadership of Professor Stephen Langdon, during the past two years, will continue its operations through the present year. Important discoveries are expected to come from where excavations have gained great headway. The oldest pictorial writings have been unearthed from a palace believed to have been that of the first kings of Babylon. The excavators are now working into some of the more important burial places, temples and fortresses that are expected to yield material of vast importance in reconstructing the story of pre-Semitic and prehistoric Sumerian races.

Madagascar has been selected as the field for an ethnological survey, under the leadership of Dr. Ralph Linton. This is a most promising region for ethnological research. The inhabitants are of cosmopolitan lineage and many of the tribes are closely allied with the Malayan groups farther to the east. The island contains twenty-six different groups of people, which are sub-divided into a greater number of tribes. The southern tribes are almost unknown. They are believed to be descendants of people who ruled the island before the Hovas, the present so-called ruling class. The Hovas apparently came originally from Sumatra. Some of the other tribes are of the Mongolian type. Still others claim to be descendants of the Arabs. The expedition will attempt to make contributions to the early history of the migrations of the Malayan group.

An expedition to southern California, under the leadership of Charles L. Owen, will be financed by the Julius and Augusta N. Rosenwald Fund. Complete data concerning the Hupa, Yurok, Cahuilla and Chemehuevi Indian tribes of that region will be sought.

—*Science.*

DR. ALBERT ERNEST JENKS, professor of anthropology, on sabbatic leave from the University of Minnesota, sailed on January 28 to spend the remainder of the year in study and research in Europe. The first half of the year was spent in Washington. Dr. Jenks returns the last of June to join the faculty of the University of California for its Southern Branch summer session in Los Angeles.

—*Science.*

DR. GEORGE GRANT MACCURDY, of Yale University, was re-elected director of the American School of Prehistoric Research in Europe at the annual meeting of the managing committee of the school held in Washington, D. C., on January 3.

THE DEGREE of Professor of Anthropology has been conferred upon Mr. A. Matsumura, of the Imperial University. This is the first title of such a kind ever presented by the Japanese Government.

THE EXECUTIVE COMMITTEE of the American Anthropological Association recently passed the following resolution:

WHEREAS: The visit of the Secretary of the Interior to the Navajo Reservation, as reported in "Progress in the Handling of Indian Affairs," reveals the distressing fact that out of 8653 Indians examined, 1981, or nearly 23%, were suffering from trachoma, a highly infectious disease frequently leading to blindness, especially in reinfection cases; and

WHEREAS: The health situation in communities of the American Indians throughout the United States is generally unwholesome as a result of the diseases introduced among the aboriginal population by white men, and now constitutes a menace to public health not correctable by ordinary medical and sanitary agencies; therefore be it

Resolved: That the American Anthropological Association approves the efforts of the Secretary of the Interior to apply prompt remedial measures, and further expresses the earnest hope that the campaign be extended, that the cooperative health and welfare organizations of the country be asked to assist in every useful way, and that a special appeal for financial aid be made to foundations and other private sources if the available public funds prove inadequate to meet this crisis; and be it further

Resolved: That copies of this resolution be sent to the Secretary of the Interior, to the National Academy of Sciences, the National Health Council, and such other organizations as may be interested.

AT THE JOINT MEETING of the American Ethnological Society and the Section of Anthropology and Psychology of the New York Academy of Sciences held on March 23, 1925, an informal discussion was held on the topic, "Influence of Early Environment on Personality." The discussion was led by Professor William Ogburn.

THE EXECUTIVE COMMITTEE of the American Anthropological Association has voted to accept an invitation from the Social Service Research Council to become associated with it. This Council consists of three delegates each from the American Economic Association, The American Sociological Society, and the American Political Science Association.

THE UNIVERSITY OF HAMBURG has conferred the degree of Ph.D. *honoris causa* on Professor Robert Lehmann-Nitsche, Chief of the Anthropological Department of the La Plata Museum and professor of anthropology in the Universities of La Plata and Buenos Aires.

M. L'ABBÉ ROUSSELOT died in Paris on December 16, 1924.

MR. N. C. NELSON of the American Museum of Natural History has recently left for Asia where he is to be archaeologist of the expedition under the leadership of Mr. Roy Chapman Andrews which the American Museum is conducting in Central Asia.

Vol. 27, No. 4 October-December, 1925

AMERICAN ANTHROPOLOGIST

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ROBERT H. LOWIE, *Editor*
FRANK G. SPECK
EDWARD W. GIFFORD } *Associate Editors*

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THE HOKAN AFFINITY OF SUBTIABA IN NICARAGUA

(Conclusion)

BY EDWARD SAPIR

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III. NOTES ON SUBTIABA AND HOKAN MORPHOLOGY

A. *General Remarks*

When one passes from a language to another that is only remotely related to it, say from English to Irish or from Haida to Hupa or from Yana to Salinan, one is overwhelmed at first by the great and obvious differences of grammatical structure. As one probes more deeply, however, significant resemblances are discovered which weigh far more in a genetic sense than the discrepancies that lie on the surface and that so often prove to be merely secondary dialectic developments which yield no very remote historical perspective. In the upshot it may appear, and frequently does appear, that the most important grammatical features of a given language and perhaps the bulk of what is conventionally called its grammar are of little value for the remoter comparison, which may rest largely on submerged features that are of only minor interest to a descriptive analysis. Those who find this a paradox think descriptively rather than historically. It would be an instructive experience in method to compare English grammar with that of the Indo-European language reconstructed by philologists. Whole departments of Indo-European grammar find no analogue in English, while a very large part of what English grammar there is is of such secondary growth as to have no relevance for Indo-European problems. To anticipate from another field, a curiously large proportion of those features that make up "Haida grammar" turn out on closer study to be dialectic developments, on a common Nadene basis, that are peculiar to it as distinct from Tlingit-Athabaskan; it appears, moreover, that some of the most significant evidence serving to link Haida with Tlingit-Athabaskan is not so much as mentioned in the formal remarks on Haida grammar that have been published. It would not seem necessary to make these self-evident remarks if so much of our work in American linguistics were not heavily biased in favor of a purely descriptive method and against all attempts at reconstructing the historical perspective.

We need not be surprised to find that some of the more superficial facts about Subtiaba morphology, enumerated in Lehmann's study, find no direct parallels in the northern Hokan languages. Subtiaba, for instance, has a "preterit tense" formed by prefixed *ni-* or *ci·-*, a "present tense" in *na-*, a "future" in *ga-*; while Pomo has a past in suffixed *-hi* or *-hi-ba*, a present in *-a*, and a future in *-eγa*; and Yana a preterit in suffixed *-ha* or *-'ni-*, a present in *-si*, and a future in *-si-*. As soon as we realize, however, that the Subtiaba "tense prefixes" are merely proclitic elements, probably of demonstrative or adverbial origin (see nos. 118, 119, 107b, 106), they cease to be of major morphological interest for the comparative point of view. As a matter of fact, some of the most important grammatical elements and features of Subtiaba have not been isolated by Lehmann and it is precisely these that prove it to possess a fundamentally Hokan grammar. I shall call attention to them in this section.

There is one point of grammar, however, that seems definitely un-Hokan. This is the order of elements in compound nouns. In Subtiaba the determining noun regularly follows instead of preceding, e. g. *si·nu· d-a·gu·* "stone-fire, flint," *d-a·u d-ia-lu·* "mouth-water, shore," *gi·tcu·* *n*^{v}*a·u·* "backhand, back of the hand," *yı·tu* (<*ya-i‘tu*) "water-eye, tear." This is remarkable because the Hokan languages as a whole compound in the reverse order, e. g. Chim.[10] *asi-n-ala* "day-sun," Kar. *cak-ac* "arrowhead-stone, flint," Sh. *tuxu-ara* "back-bone," Ach. *apxa-tsu* "night-sun, moon," Yan. *'au-ha* "fire-water, whiskey," Po. *yu-xa* "eye-water, tear," Was. *ŋauaŋ-aŋal* "baby-house, umbilical cord," Es. *tomanis-aci* "night-sun, moon," Sal. *u-ca-t* "eye-water, tears," Moh. *hukθar-iδo* "coyote-tooth." It is true that there is a certain type of Yana compound in which the determining element follows, e. g. *i‘dal’-ba* "bone-deer, deer bone," *galu-m-'i* "arm-tree, branch"; these consist of nouns in which the second member of the compound refers to the possessor of the body-part indicated by the first. It is possible that this type was at one time prevalent in Hokan and that it was generalized in Subtiaba, but it seems very much more likely that the Subtiaba order is due to the influence of certain other Mexican and Central American linguistic groups in which the determining element in compound nouns regularly follows (e. g., Maya *tzotz-ceh* "skin-deer, deerskin"; Zapotec *yutnu-kuihi* "tree-fruit, fruit tree," Chiapanec *çiquila ṅjhi-popati* "book generation, book of descendants," Mazatec *nooṅ-tzoco* "finger-foot, toe"). We have already hinted at a phonetic influence on Subtiaba of Mixtec-Zapotec-Otomi.

B. *Form of Stem*

I have called attention at various times to the large number of stems in the Hokan-Coahuiltecan languages which begin with a vowel and to the tendency of this vowel to drop out either in other forms of the same word or in cognate words in other languages of the group (e. g. Po. *uyu* "eye": *yu-xa* "eye-water, tear").[10]

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[10] For abbreviations see p. 404, fn. 4; p. 405, fn. 5. *Yan.*, pp. 28-32; *Hok.-Coa.*, pp. 289, 90; *Sup.*, pp. 71, 72.

The loss of the vowel is likely to be due only in part to a phonetic reason, in part also to an alternation that has morphological significance. There seems to be a pronounced tendency to drop the vowel when the word in which it occurs enters into compounds.

In Subtiaba, precisely as in Shasta-Achomawi, Chimariko, Pomo, Washo, Salinan, and Yuman, there is an exceedingly large percentage of stems that begin with a vowel. Some of these have already been listed in the table of Subtiaba cognates. Others, taken at random, are: *i·ya* "water,"[11] *d-undi·-lu·* "rain," *i·di·* "ash," *a'no* "father," *oco* "breath," *ϵx̣ti·u* "forehead," *i·du·* "salt," *u·c*^{n}*du·* "ulcer," *ϵ'lu·n*^{v}*u* "sloth," *ϵŋdi·* "tigre pintado," *a·ga* "pig," *ϵtci* "beak," *a·pu·* "snake," *ϵki* "fish," *a·x̣kwa* "ant," *ϵx̯ti·* "wax," *a·x̣mo* "root," *i'x̯na* "bird-cage," *i·du·* "reed," *ϵni* "doctor," *-i·du·* "to bury," *-u·sin*^{v}*a* "to chew," *u·ma* "cold." Many stems that really begin with a vowel are disguised by the presence of a nominal, verbal, or adjectival consonantal prefix (see below). In other cases the vowel is lost as such but its former existence can be demonstrated by comparative evidence and by its influence on the following consonant or on the vowel of the next syllable, e. g. *n*^{v}*aų* "ear" <**ismalk* (no. 7), *sϵ-ka* "sister" <**isa'-* (no.56). All in all, the persistence of stems with initial vowel is so marked that one is led to surmise that there lies buried in the Hokan-Coahuiltecan languages an old system of significant initial vowels, whose nature remains to be determined. S. Pomo *i'pa* (read probably *p'a*) "intestines": *apa* (read *ap'a*) "excrement" is suggestive (in other Pomo dialects *p'a* or its reflex *fa* is used for both "intestines" and "excrement"), so far as it goes; cf. perhaps also Sub. *i·su·* "bone": *m-a·su·* "thorn"; *r-a·na* "herb": *i·na* "leaf."

More conclusive than such alternations as Sub. *sϵ-ka* "sister" <**isa-* (no. 56): Was. *-i·sa* "older sister," Es. *itci* "sister," Ach.

---

[11] I do not believe that much reliance is to be placed in Lehmann's vocalic quantities. Most of these initial vowels are likely to be short even though marked long. Many German (and English) investigators have a tendency to consider all close vowels long, particularly if they occur in an open syllable and bear the stress. Such alternations as *i·tu·'* and *itu·'* "seashore," *d-a·'gu·-lu·* and *d-agu·'-lu·* "fire," *d-uku·'lu·* and *d-u·'x̣ku·-lu·* "moon" indicate that Lehmann has not accurately determined the quantities but has merely assimilated them to German speech habits.

-is "older sister," N. Dieg. *esa-n* "younger sister," *etca-n* "older sister" and *si'n*^{v}*u·* "tooth" (no. 20): Ach. *ilsa*, Sh. *ϵ˙tsau*, Ats. *ilsau*, in which an old initial vowel may be inferred for Subtiaba by comparative evidence, are cases of alternation of forms with and without the vowel in Subtiaba itself. I have noted:

t-asu· "hair": *su·hu* "hair of head" (no. 12)
d-aŋwa "mouth": *na-ŋ(g)wa-x̣a* "to yawn" (no. 16)
a'no, *ano* "father": *na-ɼin*^{v}*u·* "father-old, grandfather"
ϵtcu· "head": *gi·-tcu·* "on, over" (no. 14)
ϵmbi "owl": *na-mbi·ya* "to cry" (no. 64)
ème "camisa de mujer": *me-x̣n*^{v}*a* "shirt" (no. 52)
i·ya "water": *ya·-u*, *ya-u·* "well, estero," *yi·tu*<**ya-i˙tu* "water-eye, tear"
Sq. *isi·*, *isi-nu* "stone, flint," Tlap. *istci* "stone": *si·-nu·*, *six̂-nu* "stone" (no. 45)
imba "one": *mϵ-nu·* "nine" (no. 100)
uku·, *d-uku·-lu·* "moon, month": *imba-ku·* "one month" (no. 40)
umba "fat, big": *-mba* in compounds (no. 85)
u·ma "cold": *ma* "cold," *i·ya-ma* "water-cold"
d-u·tu· "mother": *du-ɼi·n*^{v}*a* "mother-old, grandmother"
d-u·du·-lu· "female breast": *ca·-du·-lu·* "suckling"

The formal parallelism of Sub. *i·ya* "water": *yi·tu* "water of eye, tear" and Po. *uyu* "eye": *yu-xa* "eye-water, tear" is striking in spite of the opposed order of the compounded elements.

C. *Hokan Noun Prefixes*

Prefixed d-. The Subtiaba nominal *d*-prefix is a freely movable element, as is the corresponding element in Washo and Salinan. It is unnecessary to give examples here as the reader can find them for himself in the material already presented. In many cases the noun, if beginning with a vowel, may occur with or without the *d*-prefix; in the former case it is often, or generally, followed by the demonstrative element *-lu·* (no. 122) except in the case of body-part nouns, which may have the *d*-prefix but only rarely allow the *-lu·* (e. g. in *d-u·du·-lu·* "female breast"). Words beginning with a consonant have no *d*-prefix. Here are a few examples:

d-i·ya-lu· "fluid": *i·ya* "water, stream"
d-a·gu·-lu· "fire," *si·nu· d-a·gu·* "stone of fire, flint": *a·gu·* "fire" (no. 36)

d-ax̣ka·-lu· "sun," Br. *d-aska*: *-yax̣ka* "to shine," Sq., Ar. *ahka* "sun," Tlap. *axka* "sun" (no. 46)
d-u·tu· "mother," *d-u·tu·-lu·* "my mother": *du-* "mother" (no. 55)

A peculiarity of the *d*-prefix is its use not only in absolute forms but with possessive suffixes (e. g. *d-u·tu·-lu·* "my mother," *d-a'nu·-lu·* "my father": *a'no*, Sq. *ana* "father"). This is in accord with Salinan usage (e. g. *t-um-sa·nat̓* "thy hide," *ṭ-a-sa·nat̓* "our hide," *t-uk-sa·nat̓* "your hide"; *ṭ-u* "my face," *ṭ-u·w-o* "his face"). In Washo the *d*-is found in the absolute form of words beginning with a vowel (e. g. *d-aŋal* "house," *d-i·yek* "tooth," *d-a·du* "hand"), not before consonantal stems. This is as in Subtiaba. In Washo, however, *d-* drops in the forms with possessive pronouns (e. g. *l-aŋal* "my house," *m-i·yek* "thy tooth," *a·du* "his hand"); certain of Lehmann's forms suggest that the *d-* is lost when the possessive is prefixed in Subtiaba as well (e. g. *yu·-a'no* "my father"), but unfortunately Lehmann did not arrive at complete clarity in regard to the use of possessive pronominal affixes. The consonantal nouns of Washo, which have no *d-* in the absolute, prefix it in the possessive forms of the first and third person (e. g. *mɔ·ko* "knee"; *d-i-mɔ·ko* "my knee," *da-mɔ·ko* "his knee").

Apparently *d-* was originally a general nominalizing element and served to differentiate the definitely nominal use of stems from their adjectival or verbal use. This seems to come out clearly in cases like:

d-aca-lu· "grass": *m-a·ca* "green" (nos. 38, 88)
d-agalni "runner": *-g-agnu* "to run" (no. 75)
d-ehma-lu "sky," *d-ehma* "above": *-g-i·ma* "to ascend" (nos. 44, 60)

Such alternations are entirely analogous to Washo cases like:

d-ime "water": *ime* "to drink"
d-aŋal "house": *aŋal* "to live"

and to Salinan ones like:

ṭ-a·s-o "his name": *k-ase-t* "to be called"
ṭ-ecxai "dawn": *k-ecxai* "to dawn"
ṭ-atcex "seat": *k-atcek* to sit down"
ṭ-alelke-ya "question": *p-alelko* "to ask"

Presumably the same contrast between *d*-noun and verb stem without *d*-prefix or with another prefix applies also to Pomo, but the evidence is more scanty here:

> *d-ano, d-ono* "mountain": S. E. Po. *k-ano* "mountain" (properly "to be a mountain, mountainous"? ; see no. 41)
> *d-iwe, d-uwe* "night" (as noun): *iwe* "night" (properly "to be night"? cf. Yan. *b-a·wi-sa-* "to be night"?)

In Salinan the nominal prefix *ṭ*- is used not only in the absolute and, partly, the possessed forms of many nouns but is also frequently employed to make subordinate clauses (or nominalized forms) out of verbs, in which case it replaces intransitive (or static) *k*- and transitive (or active) *p*-. This usage is regular after subordinating particles, temporal adverbs, negatives, and other proclitics, e. g.:

> *k-amṭi'* "he was hunting": *me ṭ-amṭ‘ele‘* "time the-hunting (plur.), when they hunt"
> *ko p-amk-o* "not (I-) have-ability-(of) it, I cannot": *ko ṭ-amai* "not (was) the-being able, he could not"

This interesting usage is strikingly paralleled in at least one Subtiaba example:

> *-g-apu·* "to sleep," *g-apo* "acostado": *iku· na·-tcu ma d-apa* "I go with (=in order to) the-sleeping, I'm going to sleep"

Other Nominal Prefixes in Hokan. It is possible that Hokan **t*- (Sub. *d*-) was originally confined to a particular class of nouns and was later generalized in certain dialects. There seem to be clear traces in a number of Hokan languages of other absolutive noun prefixes and the fact that Chontal has several of them (*l*-, *tl*-, *ka-l*-) suggests that Hokan may originally have had a definite set of demonstrative classifiers prefixed to nouns. There is reason to believe that Subtiaba has at least two other such elements, possibly four (*r*- and *s*-, *c*-; possibly also *p*- and *k*-). The examples will be listed with analogous forms from other Hokan languages.

An element *l*- is recognizable in Chontal (e. g. *l-imits* "foot": Tequisisteco[12] *mitci*; *l-icmatsi* "ear": Tequ. *smatsi*; *l-ahutl*" house":

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[12] A dialect closely related to Chontal.

Tequ. *hur*; *ka-l-ora* "sun": Tequ. *ora*; *tl-* is perhaps demonstrative *t-* discussed above, + *e-*, cf. compounded *ka-l-*, e. g. *tl-uŋga* "fire": Tequ. *uŋkwa*; *tl-amats* "earth": Tequ. *mats, ha-l-maks*); Salinan (e. g. *l-akana* "spider": Ach. *ts-axa*, Sub. *a·x̣ka*, no. 24; *l-otał* "palm": Hokan **itali* "hand, arm," Sal. *etał* "shoulder"; *l-emi*, *l-ime*-N "rabbit-skin blanket": Sub. *eme* "camisa de mujer," no. 52; *l-ema* "sky," *l-e·mo'* "over": Sub. *d-ehma* "above," no. 44); and Chumash (e. g. *al-apa* "sky," *al-apa-ya* "above," no. 44; *al-amün*, *ł-mono* "man"; *al-apamai* "body": *amun*; *al-aca*, *al-ica* "sun": *icau*, no. 33; *al-axüwül* "coyote"; *al-imu* "fish"; *tc-l-imi* "stream": *ma*, no. 66). The *l*-prefix is probably related to demonstrative **la* (no. 104) and to suffixed *-*ḷ*(*a*) (no. 122.) To it probably corresponds Sub. *r-*, *ṛ-*:

r-a·gu·ba "dirt": *gu·ba* "clay" (no. 30)
r-ax̣ma "mountain forest"
r-a·bu "man, husband," *r-a·ba-gu·* "woman": Hokan **ipa* (no. 54a)
r-o·ax̣i "people
r-u·wa, *r-ụ·'wa* "dog"
r-a·na "herb, medicinal herb": *d-a·n*^{v}*a* "medicinal herb" (perhaps *r-anna*<**r-atana*: **itana* "leaf," no. 39)
r-u·ma·su "espino muchugüiste": *ma·su·* "thorn, spine"
r-andi·yu "Piñuela" (originally "what is for sickness"?): *na-ndi·yu* "to be sick"
r-ax̣wa "handle of stone axe": *a·x̣wa* "axe"
r-agami "horizontal beam"
r-ɛtcu· "answer"
r-u·ba "guacal," *r-u·binya* "sieve"
r-iŋgi· "dream"
ṛ-i·gu "house-post"
ṛ-i·so·ti "wooden peg to stretch out hides"
ṛ-a·ga, *r-agu* "egg, testicles"
ṛ-ux̣ku· "animal"

A sibilant noun prefix *s-* is clearly found in Salinan as *s-*, *c*: (e. g. *s-katata* "ground-owl"; *c-k̇an* "prairie-falcon"; *c-ka·k̇* "crow" Yan. *ga·gi*, Was. *ka·gi*; *c-k̇ot* "snake, worm"; *c-lot* "gull"; *c-maiyik̇* "abalone"; *s-kele·le* "sparrow-hawk"; *s-ka·u* "blue crane"; *s-k̇ẹ·'n* "shell fish"; *s-mokok̇e* "mole"; *s-mokat* "bee"; *s-mate·xan* "quail"; *s-lipəpə* "green-winged teal"; *s-k̇almok̇* "rat"; *s-kalo* "whippoorwill"; *s-kaiya'* "raccoon"; *s-nam* "wildcat"; *s-me·koi* "rattlesnake"; *s-mohel* "female skunk"; *s-mic* "cat"; *s-nai* "eagle"; *s-na·k* "kangaroo-rat"; *s-pe·k̇* "red-tailed hawk"; *s-p'oko'* "burrowing owl"; *s-to'* "fox"; *s-tamakala* "bat"; *s-antən* "black ant": Cahuilla *ante-m* "large ants," San Luiseño *anut*;[13] *c-aᴍ-tel* "corpse": *p-ama-t* "carrion," Hokan **ima-* "to die," no. 65; *s-kan* "stomach"; *s-k̇aniltai* "rib": *kanelt̓o*; *s-koikne* "chin, beard"; *s-mokutu* "animal's windpipe"; *s-nipik* "bones of wing"; *s-panat* "skin, hide"; *s-pekeł* "eyebrow"; *s-poket* "fur, hair"; *s-puk* "muscle"; *c-tan'* "leaf": Hokan **itana*, no. 39; *c-k'alə'* "large soaproot"; *c-pok̇at'* "clover"; *s-mat* "brush"; *s-mo'* "acorn": Po. *maa*, Yan. *-ma·la*; *s-mokunał* "clover"; *c-la'* "coil basket"; *c-l-emi-y'a*, *c-l-e·mi·* "coat," no. 52; *s-k̇ape'* "tray"; *s-pok̇aixa'*^{a} "drinking-cup"; *c-k'eᴍ* "sea": Chum. *s-x̣ami*; *c-koɴ* "cave"; *s-mak̇* "asphaltum"; *s-mak'ai* "night": Chim. *himo-k* "evening"; *s-pehet* "soot"; *s-ka'ata'* "infant"; *s-tau'* "girl"; *s-kunṭa·m* "girl"; *s-kael* "scar, cut": *kala-m* "sore, scar"); more doubtfully in Chumash (e. g. *s-kuntawa* "lightning"; *s-x̣ami* "ocean": Sal. *c-k'eᴍ* "sea"; *s-tanayik* "valley"; *c-töniwa* "dog"; *s-lo*, *ts-lo* "eagle"; *s-maps* "sun"; *c-ax̣ciłc* "fish": *-ax̣ciłc* "to fish"; *c-i·'k* "louse": Sal. *t-ike'*, *ike*); and in Yuman (e. g. Dieg. *s-ilyexwau* "nail": Moh. *k-elyuho*). Among the many Salinan examples are a large number of animal names, but it would be rash to conclude that *s-* was originally a classifier for nouns indicating animals. Its employment must have been much wider. A number of Subtiaba examples justify the inference that *s-* is a classifying noun prefix in this language as well:

s-ax̣nwa "copper (axe)," *s-ax̣nwa-lu* "iron, machete": *a·x̣wa* "axe," *r-ax̣wa* "handle of stone axe"
s-ta-daŋgwa "upper lip" (*d-aŋgwa* "mouth")
s-i·tu· "eye": *yi·tu* "tear" <**ya-i·tu·* (no. 9)
s-osto "breast" (no. 5)
s-i·tin^{v}*u·* "rump"
s-ɛx̣n^{v}*u·* "penis"
s-ax̣wą "soul"
s-cambo "abdomen"
c-n^{v}*an*^{v}*o* "finger-nail"
c-iŋgoo "wooden churn": *-goo* "to filter, squeeze out"

There are likely to be two distinct *tc-* (*ts-*) prefixes. In Chumash it is probably a dialectic phonetic development of the *s-*

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[13] There has evidently been borrowing between Salinan and Shoshonean. This example clearly shows *s-* as a prefixed element.

already discussed (cf. *s-lo*, *ts-lo* "eagle"). It seems to occur particularly in the San Luis Obispo dialect (e. g. *tc-xime* "night": Santa Cruz *oxemai*; *tc-nexan* "ocean"; *tc-l-imi* "stream": *ma*, no. 66). Note that this Chumash *tc-* may be compounded with *l-* precisely as is *s-*, *c-* in Salinan (e. g. *tc-l-imi* "stream"; Sal. *c-l-emi·* "coat": *l-emi* "rabbitskin blanket"). On the other hand, a true *tc-* (*ts-*) prefix, probably of Hokan origin and perhaps related to *s-* as Chontal *tl-* is to *l-*, seems to occur in Yuman (e. g. Dieg. *tc-ipəsi* "liver": Moh. *'ipasa*, Sh. *äpci*, Ats. *opsi*); Washo (e. g. *ts-igu·guc* "belly," red.. Chum. *akcu*, *akcewe*; *ts-aŋa* "anus"; *ts-imi·bi* "hip;" *ts-iga-l* "kidney": Sub. *i·ko*, *g-i·ko* "liver, gall," no. 15; *ts-ime-l* "beard": Hokan **ima* "hair, skin, "no. 52; *ts-uku-maŋ* "spider": Ach. *ts-axa*, no. 24; *ts-akopi* "mud": Sub. *gu·ba* "clay," *r-a·gu·ba* "dirt," no. 30); possibly Pomo (e. g. *ts-i'me* "hair, fur," no. 52; *ts-awata-k* "frog": *wata-k*, *wata*); and possibly Shasta-Achomawi and Chimariko (e. g. Ach. *ts-axa* "spider": Sub. *a·x̣-ka*, no. 24; Ats. *ts-up'-dis* "navel": Hokan **unapi-*, no. 17; Ach. *ts-ami-ki*, Chim. *tc-emu* "sky": Es. *imi-ta*, no. 44). The evidence is not abundant but convincing for Yuman and Washo. On the whole the *tc*-prefix seems to be characteristic of body-part nouns.

A nominal *p*-prefix can be pretty clearly made out for Salinan (e. g. M. *p-a·kata*, A. *a·kat'*[14] "blood": Hokan **ax̣wati*, no. 3; M. *p-akenai*, A. *akainai* "animal's womb"; M. *p-aktaina'*, A.

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[14] It is not altogether clear whether in cases like this the Antoniaño dialect has actually lost a *p-*, as Mason states, or has merely not used the nominal prefix. An examination of his material suggests that original *p'* and *p* (intermediate) remain in both dialects (e. g. M. *p'xat* "excrement": A. *p'xat'*, no. 8; M. *penan* "milk": A. *pena·no*; M. *pala·kak* "California woodpecker": A. *pela·k·a'*; M. *spoket* "fur, hair": A. *spoket*; M. *pasił* "chia": A. *pasił*; M. *paɬ'ak* "manzanita": A. *pat'ax*; M. *pe'l*^{i} "pil": A. *pili*; M. *t'ənəple'* "fire-sticks": A. *tapleya*; M. *tipintca* "whiskey": A. *tepenca*. Such examples are far too numerous to allow one to say that original *p* disappears in Antoniaño. It is probably nearer correct to say that *p'* becomes ' in Antoniaño (e.g. M. *k'a'p* "acorn": A. *ka'*; M. *p'as* "son": A. *as*, read *'as*; M. *icili'p*, read *icilip*, "fingernail": A. *t'-'cele'*) but that in cases of type M. *p-*: A. zero we are really dealing with parallel forms with and without *p*-prefix. As Mason does not always write *p'*, it seems that cases like M. *spanat* "hide": A. *sanat* should really be understood as *s'panat*: *s'anat* (contrast M. and A. *spoket* "fur" above). Our interpretation is supported by the fact that the active verbal *p*-prefix does not disappear in Antoniaño and by the further fact that in derivatives of nouns with *p-* this consonant is replaced by other elements (e. g. *k-akat-e* "be bloody," *k-exako-p* "bony").

akatcanai "thumb"; M. *p-axak*, A. *axa·k'* "bone": Hokan **ihyaka*, no. 4; M. *p-'a·'t*, A. *at'* <*hat'* [?] "white oak"; M. *p-axakił*,A. *askle-t* "live oak"; M. *p-axuwe* "bow": Chum. *t-axa*, *ax*, no. 49); less safely in Chumash (e. g. *p-ako-wac*, *p-akü-was* "old man": Chon. *akwe*, Moh. *kwo-ra-*, Cochimi *aku-so*, Ton. *ku-ca* "old"; *p-awa-yic* "house": Hokan **awa*, no. 50); and in Pomo (e. g. N. Po. *b-isi-l* "rabbit-skin robe": *ici*, *itci*, *ci*, *ci-ts*; N. Po. *b-atsiya* "yellowhammer": *k-atsiya*, *k-otciyo*, *k-otciya*). A couple of examples seem to be found in Subtiaba:

p-aẋpu· "arm": *m-aẋpu·* "body"
p-an^{y}*a·u·* "palm": *n*^{y}*a·u·* "hand," *d-an*^{y}*a·u·* "finger"

Finally a Hokan *k*-prefix can also be made out with some assurance, though it nowhere appears as a common element, so far as we can see at present. It is perhaps identical with the intransitive *k*-prefix treated below. It is probably found in Pomo (e. g. *k-ano*, *k-no* "mountain": *d-ano*, *d-ono*, no. 41; *k-alaca* "moon": *alaca*, no. 31; *k-atsiya*, *k-otciyo*, *k-otciya* "yellowhammer": *b-atsiya*; *k-awina*, *k-awana*, *x-awili-n* "turtle": Sal. *ṭ-awai*, *ṭ-awə* "turtle"; *k-ako* "clam": *l-ako*, *l-axo*, *l-uk*); perhaps also in Salinan (e. g. *k-aṭo* "place": *c-oṭo*; *k-alak'* "goose, crane": Yan. *la·lagi* "goose," Chim. *lɔ·lo* "goose," S. W. Po. *lala* "wild goose," Karan. *laak* "goose," Cot. *k-rak*, Ton. *x-ilik*); Chumash (e. g. *k-utet* "woman's breast": Sub. *d-u·du·-lu·*, no. 6a; *k-cihimu* "star"); and Yuman (e. g. Moh. *k-apeta* "turtle": Ach. *häpits*; Moh. *k-elyuho* "nail": Dieg. *s-ilyexwau*). A few examples of *k*-nouns seem to be found also in Subtiaba:

k-i·a-mi·cu "bladder": *i·a-mi·cu* "urine" (compounded with *i·ya* "water")
g-i·ko, *g-ika* "liver": *i·ko* (no. 15); also *g-i·ga* "heart"?

General Survey of Hokan Nominal Prefixes. As I have already remarked, it is probable that some, and perhaps all, of these prefixes are merely stereotyped demonstrative particles:

t- < demonstrative stem **ta* (no. 105)
l- < demonstrative stem **la* (no. 104)
p- < demonstrative stem **pa* (no. 108)
k- < demonstrative stem **ka* (no. 106)
s- of unknown origin

tc- (*ts*-) of unknown origin
ka-l- (Chon.) compounded of demonstrative stems **ka* (no. 106) and **la* (no. 104)
tl- (Chon.) compounded of demonstrative stems **ta* and **la*? Perhaps Sal. *ṭ*-, which is phonetically distinct from *t*- and more common, also derives from *tl*- via *tr*-

Further, of no extra-dialectic affiliation:

Shastan *k*(*i*)- (e. g. New River *ki-'oi* "eye": Sh. *oi*; New River *k-innux* "head": Sh. *innux* "hair") < demonstrative stem **ki* related to **ka*? Perhaps also Yan. *kʻi*- in *kʻi-t̓sau-na* "tooth" (or *kʻ-it̓sau-na*?)

There can be little doubt that certain absolutive nominal suffixes are closely related to the prefixes, both being petrified forms of nominalizing elements that differed in position (proclitics and enclitics). Hence:

t- : Es. -*ta* (e. g. *imi-ta* "sky")
l- : -*l*, Sub. -*lu*·, Es. -*la* (e. g. *imi-la* "sea"; *maksa-la* "earth": Chon. *t-l-amats*, Tequisisteco *ha-l-maks*); see no. 122
p- : -*p*(*a*) (e. g. Kar. *yu-p* "eye": Po. *uyu*, *yu*-; -*i-p* suffix for tree names: Yan. *'i*- "tree, wood"); Es. -*pa* (e. g. *hik-pa* "eye," *matshai-ba* ""whites")
s- : Es. -*sa* (e. g. *imu-sa* "hole": Po. *mo*), -*s* (e. g. *loto-s* "arrow," *hoci-s* "nose," *amutata-s* "stars"); Kar. -*c*? (e. g. *kɛ·mi-c* "evil thing, monster": *kɛ·m* "bad")

And from demonstrative **na* (no. 107b) and **hi* (cf. Po. *he* "the, this"; Sal. *he* "the, that"; Chum. *he* "this"; Was. *ha*· "there near you") are probably derived

-*na* absolutive: Yan. -*na*; Es. -*no*, -*nax*, -*nex*, -*nix*; perhaps also Kar. -*n*, -*r* agentive (also, it seems, absolutive -*r*, -*ra*, e. g. *ara-r* "person"; *vɛ·cu-r* "horn": Chim. *h-owec*, Yan. *wɛ·yu*)

and

-*hi* absolutive: Yahi -*hi* (e. g. *ya·-hi* "person": N., C. Yan. *ya·-na*)

It is interesting to observe that the absolutive suffixes occur most where the prefixed elements are either wanting, entirely or practically so (Yana -*na*, -*hi*; Esselen -*l*, -*la*, -*ta*, -*sa*, -*nax*; Chimariko -*l*, -*r*; Karok -*p*, -*c*, -*r* < -*n*), or seem to be vestigial rather than living elements (Yuman -*l*; Pomo -*l*). Of these suffixes

HOKAN ABSOLUTIVE NOMINAL AFFIXES

	KAR.	*SH.-ACH.*	*CHIM.*	*PO.*	*YAN.*	*WAS.*	*ES.*	*SAL.*	*CHUM.*	*YUM.*	*CHON.*	*SUB*
t-	——	*d-* (?)	——	*d-* (?)	——	*d-*	——	*t-*, *ṭ-*	*t-*			*d-*
l-	——		——		——	——	——	*l-* (?)	*a-l-*		*l-*	*r-*, *ṛ-*
t-l-	——	——	——	——	——	——	——	(*ṭ-*)	——	——	*t-l-*	——
s-l-	——	——	——	——	——	——	——	*c-l-*(?)	*tc-l-*(?)			——
ka-l-	——	——	——	——	——	——	——	——	——	——	*ka-l-*	——
s-	——		——		——	——	——	*s-*, *c-*	*s-*, *tc-*	*s-*(?)		*s-*, *c-*
ts-	——	*ts-*(?)	*tc-*(?)	*ts-*(?)	——	*ts-*	——			*tc-*(?)		——
p-	——		——	*b-*(?)	——	——	——	*p-*				*p-*(?)
ki-; *k-*	——	*ki-* (Sh. dialects)	——	*k-*(?)	*k'*(*i*)-(?)	——	——	*k-*(?)	*k-*(?)	*k-*(?)		*k-*(?)
-ta			——		——	——	*-ta* (?)	——	——			——
-l(*a*)			*-l*, *-r*	*-l*		*-l*	*-l*(*a*)	——	——	*-l*		*-lu·*
-s(*a*)	*-c*		——		——	——	*-sa* (?)	——	——			——
-p(*a*)	*-p* (?)		——		——	——	*-pa*, *-ba* (?)	——	——			——
-n(*a*)	*-r*(*a*)		——		*-na*	——	*-na-x*	——	——			——
-hi	——	——	——		*-hi*	——	——	——	——			——

-l(a) has such a wide distribution that we may perhaps attribute it to the early Hokan period. Compound prefix-suffix absolutives are particularly common in Washo (*d . . . -l*, *ts- . . . -l*) and Subtiaba (*d- . . . -lu·*). Perhaps the most significant point about these absolutive noun affixes is the fact that the old prefix system tends to be best preserved in the south (Salinan, Chumash, Chontal, Subtiaba) and to be wanting or nearly so in the north (Yana, Chimariko, Karok, Shasta-Achomawi; prefixes hardly more than vestigial in Pomo). Esselen and Yuman seem to have a somewhat anomalous geographical position, being of the suffixing type. Washo is to be reckoned as belonging to the southern rather than the northern Hokan type. The table (p. 503) summarizes the main facts. A dash means that the element is definitely known to be lacking. A query means that there is some evidence for the element but that it is unsafe to assume it as vital. I have had to leave Seri out of the table for obvious reasons.

D. *Hokan Adjective and Verb Class-Prefixes*

One of the most far-reaching, as well as interesting, features of Hokan morphology is the use of a set of consonantal class-prefixes in the verb and adjective. Probably none of the dialects keeps the old system intact, but it is not difficult to get an inkling of what it must have been like from the survivals we still possess. The first indication of these generic prefixes, which probably defined such classifications as transitive, active intransitive, static intransitive, and adjectival (qualitative), was given by J. A. Mason in his treatment of Salinan.[15] In this language there is a formal distinction in many cases between the transitive (or active) and intransitive (or static) use of the same stem, the former being characterized by prefixed *p-*, the latter by *k-*. The nominalizing *ł*-prefix replaces these elements, as we have already seen. A few examples of the prefixes are:

k-enai "he hurt himself": *p-enai-ko* "I wounded him"
k-ospolox "he commanded": *p-espolox-o* "he seized it"
k-a·kinyi' "they thought": *p-a·ke'n-o* "I thought (it)"

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[15] See J. A. Mason, *The Language of the Salinan Indians* (University of California Publications in American Archaeology and Ethnology, 1918, vol. 14, No. 1), pp. 38-40.

Some time after the appearance of Mason's paper I pointed out[16] a number of forms in Seri and Tonkawa which resembled closely the Salinan intransitives in *k*-. Lehmann's Subtiaba material throws the whole problem of Hokan verb-adjective classes into a deeper perspective. Aside from verbs and adjectives which possess no class prefix, such as are also numerous in Salinan, there are intransitives in *g*-, which correspond exactly to the *k*-forms of Salinan (and, no doubt, of Seri and of the languages of the Coahuiltecan group), transitives in *d*- which correspond in use to Salinan *p*-forms, and a well-defined set of adjectives in *m*-. All three of these important elements had been overlooked by Lehmann; at any rate, I do not find them spoken of in his grammatical remarks. In working through the Hokan material once more from the new point of view afforded by a comparison of Salinan and Subtiaba, I soon became convinced that there were important survivals of these Subtiaba elements, particularly of intransitive *g*- and adjectival *m*-, in languages where they had never been suspected. In Yana, for instance, there can be little doubt that the *m*-prefix exists buried as the petrified initial consonant of a number of "stems." Other class-prefixes than the transitive *p*- of Salinan, transitive *d*- of Subtiaba, intransitive *k*- (*g*-) of Salinan and Subtiaba, and adjectival *m*- of Subtiaba also appeared, particularly a *p*- (*b*-) adjectival element of Yana and Pomo.

As far back as 1907 Kroeber had pointed out certain puzzling alternations in Washo of the initial consonant of certain stems,[17] e. g.:

gipus "to lift": *bipos* "to pick up, raise": (*u*)-*lepus* "to lift"
(*uga*)-*yam* "to strike with a long object": *dam* "to strike with a round object": (*dum*)-*bam* "to strike with the end of a long object"
lep "to crush": *dep* "to crush with a round object"; (*lep*)-*neb* "to crush flat a round object"

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[16] See *Sup.*, pp. 69, 70.

[17] See A. L. Kroeber, *The Washo Language of East Central California and Nevada* (University of California Publications in American Archaeology and Ethnology, 1907, vol. 4, No. 5), pp. 289, 296, 297.

The Washo forms given by Kroeber are far too few to throw much light on an evidently complex system of classifying elements, but even now the parallelism of Washo *g-ipus* "to lift" (without specified object?): *b-ipos* "to pick up, raise" (a specified object) with the Salinan forms in *k-* and *p-* is at least suggestive. Washo morphology needs looking into afresh and, when well understood, will probably throw much light on the fundamental morphological characteristics of the whole Hokan group.

Adjectives and Intransitives in m-. So large a proportion of the Subtiaba adjectives begin with *m-* (e. g., all five color adjectives listed by Lehmann are *m*-forms) that one soon suspects a prefix. Fortunately one is not left entirely to surmises, for a number of related Subtiaba words are found which show the stem without the *m*-prefix. The evidence for adjectival *m-* in Subtiaba is as follows:

m-i·ca “white,” *m-i·ica* “clean”: *t-i·tcu·* “white” (probably nominalized form in *t-* < **t-i·ca-k*): *-g-i·ca* in *di-gi·ca* “white hair”; see no. 98
m-a·ca “green, blue”: *d-aca-lu·* “grass”; see nos. 38, 87
m-a·x̣- “more, superior” in *ma·x̣-mi·x̭nᵛa* “better”: *a·x̣-* “old, mature, grown up, big,” *d-aha* “maturity”; see no. 92
m-i·-gu·x̣ku· “hard”: *gu·x̣ku·* “hard (wood)”
m-i·-kux̣i· “brave”: *ku·x̣a* “robber, thief”
m-i·-nanda “weak”: *ci·-ni-nando* “estoy rendido”
Sq. *m-idagi-na* “black,” *m-i·du·u·* “night” < **m-idaki* or **m-idaku*: Coah. *tako·-m* “night”; see no. 42
m-i·x̭nᵛa “good”: Hokan **ix̣(a)na*; see no. 87
m-a·ca “raw” (originally “red”?); see no. 93
m-i·ka “sour”: Hokan **ik̓ai*; see no. 96
m-i·ta·u “sweet”: Po. *b-itau*, *tu-itu* (red.); see no. 97
m-ax̣ni· “full”: Yan. *b-a’ni·-*; see no. 86
m-ox̣mo “yellow” (red?), *m-ox̣mo-ya* “color”; see no. 99
m-aŋga “red” (cf. Shoshonean *aŋka-* “red”?)
m-i·u “bitter”
m-i·x̭tcų· “broad”
m-ismi·du “narrow”
m-i·sų·a “hard”
m-i·si·ta “high”; see no. 89
m-i·gi·nᵛu· “heavy”
m-i·x̭nu· “deep”
m-ix̭ka, *m-i·ka* “warm”
m-ix̣nu (?) “yellow”
m-ax̣ma, *m-asma*, *m-a·ma* “quick, at once”

m-i·no, *m-i·na·u* "alone, self"; see no. 84
m-u·su, *m-u·sa* "beautiful" (perhaps borrowed from Spanish *hermoso*, as Lehmann suggests; if so, *her-* was dropped perhaps because of feeling for adjectival *m-*)

Perhaps a number of nouns belong here too (cf. *m-i·du·u·* "night" above), e. g.:

m-ini·na "fog, darkness"
m-aẋpu· "body": *p-aẋpu·* "arm" (no. 1)
m-a·su· "thorn, spine, fish-bone": *i·su·* "bone" (no. 4); "thorn" < "bony, bone-like"?
-m-i·cu in *i·a-mi·cu* "urine," *k-i·a-mi·cu* "bladder" (*i·a* "water")

and several others. These may be substantivized adjectives but are too doubtful in any case to help us here. It is probably not an accident that the verbs in *m-* are either clearly intransitive or easily conceived as such. Presumably these are to be classed with the *m*-adjectives. They are:

-m-in^{v}*u·* "to fear"
-m-a·i "to be born"
-m-ai· "to be able"
-m-u·xi· "to paint" (probably denominative from stem of *m-oẋmo* "yellow")
-m-an^{v}*u·* "to know, to be wise"
-m-ada "to give" (without object; contrast *ika ni·-mada* "you gave" with *iku· na-cna* "I give you")

The *m*-forms so far considered all seem to have vocalic stems (it being assumed that the *m-* is a prefix). But there seems also to be a set of intransitive verbs and adjectives whose stems begin with a consonant and which are preceded by a homorganic nasal (*m*, *n*, *η*). This nasal is in all probability the same element as the adjectival and intransitive *m-*. Such cases are:

-n-diϵgu· "to laugh" (no. 71) < **m-idiϵ́gu·* (or **m-iliϵ́gu·*)?
-n-ta·u· "to be thirsty"
-n-distaa "to cough"
-n-di·yu "to be sick" (no. 95) < **m-adi·´-yu* (contrast Yan. *m-a·´di-* with different accent)?
-n-dayu "to read"
-n-dị·hi· "to write"
-n-tca-ẉa "to make a noise, to scream"
-η-giko "to be feverish": *gi·ko* "liver" (no. 15)

-m-bi·ya "to cry" (no. 64)
m-pa·x̣i "long, straight: *pax̣i, pa·hi*
-m-pa·u, -m-ba "fat, big" <**m-upʽaw* (no. 85)? but also *umba, ombo* (with prothetic vowel colored by vowel originally following *m*-?)

From the standpoint of Yana itself there are no prefixes in the language. It is only on the basis of comparative evidence that one begins to realize that a number of old Hokan class prefixes are still traceable in Yana. Several formal peculiarities of a number of Yana elements become more intelligible when these prefixes are admitted, otherwise we are left with several quite meaningless first-position "stems" on our hands. Thus, primary *ma·si-* "to be ripe": secondary *-si-* "to be ripe, satiated" (e. g. *gi·-si-tdi-* "to be satiated") can only be explained from the Yana standpoint as *ma·-si-*: *-si-*, *ma·-* being a "primary stem" with unknown meaning. Comparison with such verbs as *ma·la-* "to refuse" and *ma·si-dja-* "to be glad" yields nothing. Again, *maha·-* "to melt" must either be dismissed as a disyllabic "stem" or analyzed mechanically as first-position stem *ma-*, of unknown meaning, and *-ha·-* (cf. independent *ha-*) "water, liquid," *ha·-* "to be wet." The truth of the matter, however, would seem to be that these are really disyllabic vocalic stems with adjectival or static *m*-prefix, hence *m-a·si-*, *m-aha·-*. It is precisely the prefix which preserved the initial stem vowel that is ordinarily lost in Yana. Yana *ha-* "water," *ha·-* "to be wet": *m-aha·-* "to melt" (really "to be watering") is simply another example of the well-known Hokan alternation of **xa* "water": **axa*. It is remarkable, in any event, that the great majority of Yana verb-stems in *m-* are adjectival or static. Chance distribution would require a larger number of transitives (in which the *m-* properly belongs to the stem, e. g. *mɔ·-*, *ma-* "to eat": Hokan **ama-*; *mu·-* "to work": Hokan **umu-*). Examples of prefixed *m-* in Yana are:

m-aha·- "to melt" (intr.): *ha-* "water" (Hokan **axa*), *ha·-* "to be wet"
m-a·si- "to be ripe": secondary verb-stem *-si-* "to be satiated" (*m-a·si-* perhaps related to old stem **asi-* "sun," see no. 33)
m-a·di- "to be sick": secondary verb-stem *-di-* "to be sick" (e. g. *dut'-di-* "to be greatly sick"); Sub. *-n-di·yu* (no. 95)

m-ilap- "to wake up" (intr.): secondary verb-stem *-'ilap-* (e. g. *'ip-'ilap-* "to impel-wake, to wake up" (tr.), *bui-'ilap-* "to wake up by kicking"); here *-'ilap-* is evidently identical with *-ilap-* of *m-ilap-*, which cannot be analyzed as stem *mi-*+*-lap-*[18]
m-at̓cun- "to stretch" (intr.): secondary verb-stem *-t̓cun-* "asunder; to split, rend, burst"
m-aha-t̓ai-si- "to warm oneself by the fire" (*-aha-* perhaps related to *ha·-* of *ha·mu-tdi-* "to be warm"; *-t̓ai-* refers to "fire")
m-a·sidja- "to be glad": secondary verb-stem *-tc'dja-i-* "to be glad, impatient with joy"
m-a·la- "to refuse, not to want to do": Sal. *k-ile* "to be lazy," *m-ale* "to doubt"
m-atc'i·- "to be melting"
m-adjup-giri·- "fire is out"
m-a·dira- "(dead salmon) is rotten, decayed"
m-alla-p'a- "to be bad"
m-alla- "to stay away for a long time"
m-a·t'i- "to be tabooed"
m-a·p'djamai- "to be supernatural"
m-ak̓au- "(baked bread, dried earth) cracks"
m-a'-t̓sk'i- "feathers are old, worn out": Sub. *a·x̣-* "old" no. 92)
-m-u'du-i- "yellow" (no. 99)
m-a·ga- "to be swollen, to swell"
m-aits-gini- "foot, hand, sleeps"
m-a·t̓in-si "common people" (*-si* is agentive; cf. *t̓ini·-* "little"?)
m-a·t̓adju- "to be winter"
m-andja- "to be sharp"
m-a·t̓al- "to be sharp and black"
m-i·djat-t̓cu- "clothing is torn"
m-i·t̓su- "to be scratched"
m-i·k̓ai- "to be angry"
m-i·dja "to be heavy"
m-it̓s- "to be possessed of" (with incorporated object)

In Pomo too *m-* seems to be used as adjectival and intransitive prefix, though the material is more scanty than in Subtiaba and Yana. Examples are:

E. Po. *m-inam* "to be full, to fill" (cf. no. 86)
E. Po. *m-ato* "large": *b-ate*, *b-ate-n*, *b-a'te*, *b-ate-ne-k*, *te*, *ti* (other dialects)

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[18] See E. Sapir, *The Fundamental Elements of Northern Yana* (University of California Publications in American Archaeology and Ethnology, 1922, vol. 13, No. 6), p. 22, where *mi-lap-* is suggested (also *mi·-k̓ai-* "to be angry" and other similar forms).

S. E. Po. *m-axaii-t* "sweet" <**-asayi-*? (for S. E. Po. *x*<*s* cf. *bexe* "meat": N., E., S.W. Po. *bice*; *xa* "fish": N., C., E., N. E. Po. *ca*, *sa*), note parallelism to S. E. Po. *m- atsaki-t* "bitter": Sal. *k-esiyu-k̇* "sweet," *k-esi·o-hol* "salty"

S. E. Po. *m-atsaki-t* "bitter": *tcaha*, *djaha* (other dialects)

N. E. Po. *m-ukauka* "dead": E. Po. *xauk-* in *xauk-mudal* "dead" (properly "dead-lying") <*(*u*)*k'auk-* (for N. E. Po. *k'*: E. Po. *x* cf. *ka* "water": *xa*; *kabe* "rock": *xabe*; *kali* "tree": *xale*)

N. E. Po. *m-ikalmi* "round"

S. E. Po. *m-utsa-ka* "whiskey" <*bitter-water"? (cf. *-ka* "water")

m-ice, *m-eceu*, *m-iceu*, *m-ceu*, *m-ixe-t* "stinking": Chim. *-m-itcxu-* "to stink"; Sal. *m-e·s* "to smell, scent" (are Kwakiutl *me·s-* and Nootka *mis-* "to smell" remotely related?)

N. Po. *m-itsel* "to laugh": Yan. *djal-* "to laugh"

A few Pomo nouns in *m-* look as though they might be substantivized verbs:

m-atci, *m-adji*, *m-itci-l* "day" (properly *m-atci* "to be day," **m-atci-l* "day"?): Hokan *asi* "day" (no. 33)

In Salinan the *m*-prefix, which seems to belong to the very oldest stratum of Hokan formal elements, had evidently long ceased to be productive, its place being taken by intransitive *k*- (see Mason's long list of *k*-adjectives).[19] This is shown by the presence of derivatives based on older *m-* forms, e. g. substantival *t'ə-mas* "grass": Subtiaba *m-a·ca* "green," *d-aca-lu·* "grass" (see nos. 38, 88). It seems very possible that in a number of instances *m*-adjectives (and intransitive verbs) were treated as bases for new adjectives (and verbs) in *k*- (or *ṭ*-, *s*-), in some cases with the stem vowel repeated between the new prefix and the older *m*-, e.g.:

k-am-a´cu "sweet" <**k-am-a´syu* <**k-am-a´siyu*: S. E. Po. *m-axaii-t* "sweet" <**m-asayi-t*; Yuman **m-ayu-l-* "sweet" <**m-asyu-l-* (like Yuman **iyu* "eye" <**isyu*, see no. 9), Moh. *m-aδul*^{y}*-k*, Dieg. *m-iyul-k*; Sal. *k-esiyu´-k̇* "sweet," *k-esi·o´-hol* "salty" <**k-asiyu´-*. Hence Sal. *k-ama´cu* and *k-esiyuk̇* "sweet" may both contain Hokan **asiyu*

k'-m-elo^{u}, *c-m-oṭ* "heavy, deep (snow)"

ṭ-em-itcu-ko "holey": Sal. *m-etsiliu* "perforation," perhaps properly "to be perforated in several places" (stem **-itsiu* with pl. *-l-*?)

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[19] Mason. *op. cit.*, pp. 149-151.

k-om-ux "elder" < *(*a*)*m-ax̣aw*: Sub. *a·x̣-* "old," *m-a·x̣-* "superior," Chim. *hawi-* (no. 92)
k-um-tica "brown" (no. 99)
s-m-at "beautiful," plur. *s-m-ahate-ł* < Hokan **m-ati*: Po. *k-adi, k-idi, k-odi, k-udi* "good"

However this may be, there seem to be a number of Salinan forms in which initial *m-* may be analyzed as a prefix, e.g.:

m-e·s, plur. *m-isli-p* "to smell, scent" (cf. Pomo forms above)
m-aṭʻal "white"
m-ats'e-ko', *m-atse-ko* "chipmunk": Hokan *m-a'su-* "red" (no. 93)
m-atcakat (M) "to be outside"
m-a'we·xe (M) "to stand firm, resist": *exwe* (dit.)
m-anketso (M) "to insert, add"
m-itac "to make": *eta'* "to make"
m-a'n (M) "to pass, enter"

The forms marked (M) are given by Mason as having movable *m-*, but he does not state on what evidence he considers the consonant a prefix. Perhaps the forms he lists with (*m*)- are simply second person singular imperatives with prefixed *m-* "thou," in which case they naturally do not belong here.

The *m*-prefix is no doubt found elsewhere in Hokan, but the evidence is sparse at present. In all probability it was generally submerged in the stem, as in Salinan, e. g.:

Se. *m-osso-ł* "yellow," *ko-m-asso-ł* "brown"; Chim. *himamsu-t* (red. from basic **m-asu-*) "green, blue, yellow": Sub. *m-a·ca* "green, blue" (no. 88)
Chim. *masomas* "red salmon" (red. from basic **m-aso-?*); Com. *-m-so-l* "red"; Cot. *m-sa-ɛ* "red"; Sub. *m-a·ca* "raw (meta)": Chum. *t-asu-n* "red"; Po. *t-'as* "red," *k-'asi-l* "redwood." Hokan **m-a'su-*, **t-a'su-*, **k-a'su-* "red, raw" (no 93)?
Yuman *m-asa.-m, im-ica-pa, um-esa-p* "white"; Ton. *m-as-lak*; Cot. *m-eso-i*; Sub. *m-i·ca*: Sub. *t-i·tcu·*, *-g-i·ca* (no. 98)
Ton. *m-akik* "yellow"
Yuman **m-ayu-l-k* "sweet": Hokan **asiyu* (see above)
Chim. *-m-itcxu* "to stink" (see above)
Chim. *-m-ana-t* "ripe" (no. 94); but cf. *ho·mat* "ripe"

Other examples of *m*-adjectives in Chimariko may be:

-m-ama-t "alive": Hokan **ama* "house; to dwell" (no. 78)
m-ata'i "clean"
m-e·ne'i, *m-ene* "white"

The Esselen evidence for intransitive (and nominal) *m-* is naturally sparse but happens to be not without interest:

m-alpa-pic^{i} "hablador, gossiper": *alpa-pisi* "hablador"
m-atsi "mother": *atsia*; Po. *tce-de*, *-tce-n*, *-ce-k*; Ton. *issa*
m-acai-pa "to be hungry"
m-alitax-pa "there is nothing"
m-alinaika-pa "much"
m-atshai-ba "whites, gente de razon" (no. 98)
m-awi "to sing"
m-epe "to dance (also written *mefpa*, i. e. *m-epφa*, *m-ep'a*?): Chim. *-sa-mxu-* "to dance" <*-*mp'u* (for Chim. *xu* <Hokan *p'u* see *Yan.*, nos. 107, 109, 110, 111); S. E. Po. *xe-mfom* "to dance" (*xe-* probably "to sing," cf. S. E. Po. *xe-kolne* "to sing" and *ke-*, *xai-*, *ih-* of other dialects; *-mfom* <*-*mp'o-m*, cf. *f̱a* "excrement" <(*a*)*p'a*)

Other Adjectival Prefixes in Hokan. An adjectival *p-* (or *b-*) prefix, apparently not found in Subtiaba, may be uncovered in Pomo and Yana, possibly also elsewhere in Hokan-Coahuiltecan. Pomo examples are:

b-ate, *b-a'te*, *b-ate-n*, *b-ate-ne-k* "large": *m-ato*, *ti*, *te*
N. Po. *b-itcu* "small": S. Po. *k-itci-du* (see no. 91)
S. W. Po. *p-icu-du* "bad" (*-du* as in S. Po. *k-itci-du* "small"), C. Po. *b-ase-t* (cf. N. Po. *t-iic* "bad"?)
S. Po. *-b-itau* in *kodi-bitau* "good-tasting, sweet": S. W. Po. *tuitu* "sweet" (red.; see no. 97)
E. Po. *b-iko* "bitter": Sub. *i·ko* "gall," *g-i·ko* "liver" (no. 15)
E. Po. *b-agil* "long"
S. E. Po. *b-itsili-n* "long": Chim. *ḣitcun* "long," *xu-itcula-n* "not-long, short"; Yan. *djul-* "to be long"
E. Po. *p-itau* "white" (Kroeber writes *p-it̓au*): N. E. Po. *taiya* (read *t̓aya*?); Sh. *it̓a·yu*; Yan. *t̓a-lam-*
N. E. Po. *p-'etene* "angry"

In Yana there is a considerable number of adjectives beginning with *ba-*. These I have hitherto analyzed either as polysyllabic stems (e. g. *ba'ni·-* "to be full") or as containing a first position stem *ba-* of general or unknown significance (e. g. *ba-gan-* "to be short"). It now seems best to look upon these forms as containing an adjectival *b*-prefix which is identical with Pomo *b-*, *p-*, and parallel to the adjectival *m-* discussed above. The *a*-vowel is probably generalized from stems which properly began with *a* (see, e. g., *b-adjal-* "large" and *b-a'ni·-* "full" below). As initial short vowels generally disappeared in Yana (e. g. *djul-* "long" < **idju´la-*) unless preserved by a prefixed consonant, forms like **badjal-* (assimilated from **bidjal-*) and *ba'ni·-* (with original *a*) would come to be felt as analyzable into *ba-djal-*, *ba-'ni·-* (phonetically like, e. g., *ba-djil* "to run in a circle") rather than into *b-adjal-*, *b-a'ni·-* when the adjectival prefixes (*m-*, *b-*, *d-*) had ceased to be productive. The "pseudo-stems" *ba-* and *da-* thus abstracted may have crowded out the forms in which *b-* and *d-* were followed by other vowels. Examples are:

b-agan-(*gu-*) "to be short" (cf. -'*gan-*, Yahi *-sgan-* "to break"?)
b-ałciłłai- "to be thick"
b-agul- "to be tired": secondary stem *-gul-* "tired, obstructed"
b-ałsau- "to be caught in a cleft": secondary stem *-łsau-* "in a cleft"
b-adjal- "to be large": Sal. *k-etcą·* "great," *ṭi-k-etcan-o* "his size"
b-ałat'-p'al-gu- "to be flat"
b-a'ni· "to be full": Sub. *m-ax̣ni·* (no. 86)
b-adjil- "to be coiled": *-djil-* "around, in a circle"
b-asi·- "to be yesterday, night (as lapse of time)": Hokan **asi* "sun, moon, day" (no. 33)
b-a·wi-sa- "to be night, dark" (*-sa-* "off, away" frequently used in adjectives): Po. *iwe*, *i'we*, *d-iwe*, *d-uwe* "night"
b-ahulului-gu- "to be round, spherical"
b-agulai-maki- "to be humpbacked" (*maki* "back")
b-atsdjai-gu- "to be very glad": *m-a·sidja-* "to be glad"
b-ak'u· "to spill" (intr.): secondary stem *-k'u-*, *-k'u·-* "crumply, finely divided pieces"

A possible Chimariko example of adjectival *p-* is:

p-ala "strong": Yan. *lau-* "to be strong"

Possible Coahuiltecan examples are:

Com. *p-ese´x* "good": Chim. *hisik-ni* (*hisiki-*), *hisi-ta*; Sal. *sa·x*, plur. *sake-heł*, Hokan **isa´k'i* "good"?
Com. *p-ele* "good"; Karan. *p-la*: Karan. *k-laban* "well, healthy"

A Hokan adjectival *d-* (*t-*) prefix (see no. 121) may be identical in origin with the far more clearly ascertainable nominal *d-* (no. 120). Subtiaba examples are not common, perhaps because *m-* was generalized as the adjective prefix par excellence:

d-a·gu "large" (no. 90): Se. *k-ako-ł*
d-a·ca "hairy": *d-aca-lu·* "grass" (no. 38), *m-a·ca* "green" (no. 88)

Pomo examples are:

N. Po. *d-atoi* "striped"
E. Po. t-*oro*- (perhaps related to N. Po. *d-atoi*) in reduplicated toro-toro-*k* "striped"
S. W. Po. *d-akati* "striped"
N. Po. *t-'as* "red": Hokan **m-a'su*- (no. 93); S. W. Po. *k-'is* "red"; Po. *k-'asi-l* "redwood"
N. Po. *t-iic* "bad": C. Po. *b-ase-t*
N. E. Po. t-*uya* "small": S. Po. -*uya* in *baiya-uya* "man-small, boy," *mata-uya* "woman-small, girl"

In Yana there is a class of adjectives in *da*- which refer to appearance, including color (e. g. *da-mbu-sa*- "to be beautiful," *da-lili·-sa*- "to be smooth," *da-'t'au-sa*- "to be flat," *da-ťsgai-sa*- "to be green, blue," *da-p'al-sa*- "to be black," *da-p'i·ťi-sa*- "to be blue," *da-mu'dui-sa*- "to be yellow," *da-wat'-sa*- "to be brownish red"). This *da*- may be identical, at last analysis, with a verb stem *da*- "to look" (e. g. *da-lil*- "to look back," *da-ʳt'dja*- "to look up into the air"), but it seems far more likely that these two elements are quite distinct. The *da*- is morphologically parallel to adjectival *ba*- (cf. *da-sira·k̓ai-sa*- "to be all white in appearance" with *ba-sira·k̓ai-gu*- "to be white all over one's head"; *da-wat'-sa*- "to be red" with *ba-wat'-gu*- "one object is red") and it seems possible that it is generalized from stems which originally began with *a* and were preceded by adjectival *d*- (e. g. *da-wat'*- "to be red," originally *d-awat'*- "to be blood-colored," Hokan **axwa'ti*-, see no. 3). The Washo adjectival *d*-, as Kroeber pointed out long ago, is perhaps identical with the nominal *d*-. Examples are:

d-aŋau "good": *aŋau* "good" (properly "to be good"?) (no. 87)
t-'iyeli "large"
t-'ɛ·kyu "many"

Here may belong also the color-adjectives in *dal*- and *del*- (e. g. *dal-cocoŋi* "red," *dal-tsatsami* "green, yellow," *del-pi·lpili* "blue," *del-elegi* "dark red") which bear a striking resemblance to the Yana adjectives of appearance in *da*.- The Salinan adjectival *t*-, *ṭ*-can hardly be disconnected from the common nominal element *t*-, *ṭ*-. Examples are:

t-elwa-ne "strong, fierce" (literally "man-ly"): *lu·wa'* "man, male"
ṭ-emitcu-ḱo "hole-y": *metsiliu* "perforation"
ṭ'-xauwat "yellow": *s-xauwit'* "acorn"

A probable example of adjectival *t-* in Chumash is:

t-asu-n, *t-ase-n* "red": *uks-tai* (read *u's-?*); Hokan **-a'su*, **m-a'su*, **k-a'su*, **t-a'su* (no. 93)

Corresponding to the *r*-nouns of Subtiaba there seems to be also a set of adjectives in *r-*. The examples are not numerous:

r-aŋga "old, worn out"
r-umbu· "roasted" (also as verb: *rumbu·* "to roast")
r-itci, *ṛ-i·si·* "small, lean, young": *-tci*, red. *tci·tci* "small. child" (no. 91)

A Salinan *l*-prefix corresponding to this *r-* is suggested by:

l-amayu, *l-amai* "right"
l-apai "left"

The *l-* of these examples is very probably identical with the nominal *l-* already discussed.

Corresponding to the *s-* (*c-*) of Subtiaba nouns is a preconsonantal *s-*, *c-* in a few adjectives:

s-tan^{v}*u·* "lean"
c-n^{v}*aẋu·* "erect"

A number of *s*-adjectives may also be established for Salinan:

s-ki·ntui', *s-kunt'ui'* "small, thin, lesser"
s-ki·tana, *s-kotan* "small"
s-kusna "half (moon)"
s-mat (or *s-m-at*) "beautiful"
s-pukita "upper"
s-ti·yo'owan "pretty, graceful"
s-wanan "lonesome"
s-tikwau (Mig.) "young, new": *k-teḱa* (Ant.)

A corresponding *ts*-element seems to be found in Chumash:

ts-owis "bad" (S. Luis Obispo)
ts-exu "much" (S. Luis Obispo): *uhu* (S. Barbara)

Intransitives in g-. We have already seen how basic in Salinan is the distinction between intransitives in *k-* and transitives in *p-*.

It can be shown that an analogous relation holds in Subtiaba between *g*-forms and *d*-forms. The *g*-verbs seem to indicate both the active intransitive and the static and thus occupy a position midway between the adjectival and static verbs in *m*- and the transitives. Not all transitives begin with a *d*- nor are all intransitives *g*-verbs, but the *d*-verbs are so preponderantly transitive and so many of the *g*-verbs are intransitive that it seems impossible to resist the inference that both *g*- and *d*- are prefixed elements and that they are respectively intransitive and transitive in force. Fortunately, we are not left entirely to statistical surmises but have several clear instances of *g*- alternating with other elements (*m*-, *d*-). It goes without saying that the Subtiaba idiom is not always in accord with English usage, a number of *g*-verbs appearing transitive in translation, but on the whole their intransitive character is apparent enough. It will be best to list all the examples of *g*-verbs, so that the reader may draw his own conclusions. Probable intransitives are:

g-u·ga "to touch" (as intr., e. g. *iku· ni·-gu·ga* "I touched"): *d-u·ga* (tr., e. g. *i·na gi·-du·ga* "cara tocada"; *da·-tcu· d-u·ga d-a·gu·-lu·* "do not touch the fire!")

g-apu· "to sleep," *g-apo* "acostado": *d-apa* (verbal noun, e. g. *iku· na·tcu ma d-apa* "I go with the-sleeping, I go in order to sleep, I shall sleep"); see no. 80.

g-iu "to eat" (intr., e. g. *iku· nax̣ka g-iu* "I go to eat"; *iku· a·-na-ma·i g-iu·* "I cannot eat"): *m-i·u* (e. g. *ηω·i ga·n*^{v}*u m-i·u* "flesh to eat"; for *m*- see no. 114; see no. 67. Transitive forms of "to eat" seem to be expressed by another verb, *-su* (e. g. *ni·-su iku· ηω·i-lu·* "I ate the meat")

g-i·ma "to ascend": *d-ehma-lu* "sky"; see nos. 44, 60

g-agnu "to run": *d-agalni* "runner"; see no. 75

g-i·ca "white (e. g. *di-gi·ca* "white hair"): *m-i·ca, t-i·tcu·* "white"; see no. 98

g-a·ya "to have, hold, carry," *g-aya·a* "to bring, drag" (probably intr., e. g. *iku· do·-na-a·-gaya·a* "no estoy trayendo"): *d-a·ya* (probably tr., e. g. *d-a·ya-lu· sɛku·* "guard, hold the child!"); see no. 58a

g-ωto "to wait, hope": *d-a·ti(-lu·)* "espérese!"

k-uni·nu "sleeping," *k-u·ninu-mba* "sleepy-head": *na-uni·nu·* "to be sleepy"

g-oo "to winnow, filter, squeeze out" (intr.?): *d-oo* "to squeeze out, press out" (tr.?)

gi·tu· "to begin"
ga·ta "to arrive"
gu·wa, *guŋwa* "to bathe" (intr.)
g-amo "fire burns"; see no. 59
goho "to fall"
g-a·u "to go"; see no. 70
g-a·wi·, *-g-a·gwi·* "to flee, run"; see no. 70
gi·i· "sun goes down"
gax̣nu· (*gwa*) "to go out (of the house)"
gi·sto "to live, be"
gax̣mo, *gax̣ma·ya* "to know"
ku·ma "to deny"
gaa "to foam"
gu· "to sleep" (*g-* probably belongs to stem); see no. 81
gu·sta-ma "to appear"
na-gox̣ta·-lu· "volverse, to return"
gi·ta "there is"
ki·x̣i "there is"
k-a·mo "to sit," *k-a·ma goo-yu·* "estoy sentado en la casa"; see no. 78
g-an^{v}*u·* "to die"; see no. 65
g-i·x̣na, *g-ax̣na* "to dance," *g-u·x̣na* "dance" (n.)
ga·yu· "to be angry"
gau· "drunk, drunkard"
gu·x̣ku· "firm"
koho "to stand" (?; in *max̣pu· koho* "erect, straight-standing")
ga·ga "cooked"
gaki· "pregnant"
gayin^{v}*a* "hole"
g-oco "to wake up" (tr., intr.): *d-a·co* "to get up" (?)
gi·hi (*i·ya*) "to pour out (water)"
ga·ya "to pass (the night)" (e. g. *iku· na·-ga·ya mi·du·u·-lu·* "paso la noche")
gu·ci· "to guard, keep"
ga·salu· "to make a knot"
gin^{v}*a·u·* "to mix"
ga·du "to sow (maize)"
gu·x̣a "to steal, rob," *ku·x̣a* "thief"
gu·mba "to divide": *s-kwamba* "to cut" (probably caus.: "to cause to divide, be divided")
gatca·pan^{v}*a* "to cover" (fut. *ga-*?)

In a number of cases it seems safer to interpret *ga-* as the future particle (see no. 106) than as the *g*-prefix we are discussing. Forms in *na-ga-* prove nothing, as "present" *na-* may be combined with "future" *ga-*. Such verbs are:

na-gasi·hi "to give birth" (cf. *nax̣ka gasi·hi* "will give birth," literally "goes to give birth")
na-gani·ku· "to marry" (probably *ga-ni·-ku* "will-make-female, will take to wife," periphrastic verb in *-ni·-* "to make," such as are common in Subtiaba)
na-ga-spa·tu· "to chop" (tr. in *s-*)
na-ga-n^{v}o·a "to hunt" (cf. *a·ma gi·-n^{v}ua* "fish-net")

Salinan intransitives in *k-* have already been discussed. It will not be necessary to give a long list of examples here as the element is perfectly clear both as to existence and usage. The reader will find a large number of intransitive *k*-verbs and *k*-adjectives listed in Mason's study of Salinan.

In Pomo there is good evidence for the presence of a *k*-prefix in adjectives. Examples are:

S. W. *k-'is* "red," Po. *k-'asi-l*, *k-asi-l* "redwood": *t-'as* "red," Hokan *-*a'su*, **m-a'su* (no. 93)
S. *k-itci-du* "small": N. *b-itcu* (no. 91)
k-apoc, *k-apuc* "short": *ḅuutc*, *boto*
N. E. *k-ułui* "short": N. E. *ula-* "boy, girl"; Chim. *ule·-ta* "small"
S. E. *k-ata* "old woman": S. E. *m-utui* "old man," Po. *ma-tea*, *ma-tiai ma-tu-l* "old woman" (*ma-* "female")
k-ale, *k-ałe*, *k-a'łe* "white"
N. *k-atse* "black"
k-'ili, *k-'li*, red. *kilik-kilik* "black"
E. *keda-keda-k* "red" (red.)
k-adi, *k-idi*, *k-odi*, *k-udi* "good"
k-ahma, *k-amat*, *k-ahmati*, *k-amale* "angry"

Possible examples of *k-* in intransitive verbs are:

-kata "to taste" (in N. *kidi-kata* "good-tasting, sweet"; E. *keresup-kata* "sweet")
S. *katan* "to run"
S. E. *kana-kit* "to sleep"
N. *kaman*, C. *kamam* "to awaken"
N. E. *kamantu* "to like": E. *mara* (?)
C. *kadetc* "to fight"
E. *kilmahwak* "to fight"
katca, *katcat* "to cry"
kuwai "to laugh" (but also *cowai*, *tcuwai*)
E. *kopxun* "to stand"

The Seri evidence is clear for the use of *k-* as an adjectival (and numeral) prefix:

k-evił "red"
k-maso-ł "yellow," *ko-masso-ł* "brown": *mosso-ł* "yellow"; Sub. *ma·ca* "green, blue" (no. 88)
k-opoł "black": Yan. *p'al-*, *-p'al-* "black"; Karan. *pal*
k-ovił "blue, green"
k-o'po "white" (read *k-op'o*?): Chum. *pupu* (red.) "white"; Was. *-pɔ·poi* (red.); Chon. *-fuka*; Com. *-pok*, *-puk*; Karan. *peka*
k-ako-ł "great": Sub. *d-a·gu* "large" (no. 90)
k-i'pi "good"
k-axku-m, *k-uxo-m* "two": Hokan **ax̣wa*(*k̄u*) (no. 101)
k-axpa-m "three" (no. 102)
k-osox-t "four": *sox-ku-m* "four"

It is possible that these examples are merely instances of a wider use of *k-* as an intransitive or static verb prefix.

The evidence for *k*-intransitives and adjective-verbs outside of Subtiaba, Salinan, Pomo, and Seri is scanty, yet perhaps not altogether negligible. The Washo material is inconclusive:

g-ipus "to lift" (without specified object?): *b-ipos* "to pick up, raise"
giti "to bite"
galam "to like"
gayam "to strike, hit"
gegel "to sit" (sing.)

Possible Chumash examples are:

k-opo-k "dead": Sub. *g-apo* "to lie," *g-apu·* "to sleep"; Chim. *-po* "to sleep" (no. 80)
kakan "to stand"

Possible Esselen examples are:

k-olhala, *k-olxala-bic* "hablador, story-teller"
k-oso- "to sit down": Sub. *-tsu* "to be"; Yan. *dju-* "to dwell, sit" (no. 57)

In the Coahuiltecan group intransitive (or adjectival) *k-* is almost certainly found:

Ton. *k-opol* "round": Ton. *pilil* "round" (with final reduplication); Po. *pololo* (with final reduplication)
Cot. *k-ɛnas* "good": Ton. *hinox*; Sub. *m-i·x̯n*^{v}*a*; Was. *aŋau* (no. 87)
Coa. *k-'aux* "bad" (read *k-'ax*^{u}?): Ton. *ɛx*
Com. *k-içax* "small, little, young": Ton. *ca-xun*; Coa. *ca-n*; perhaps also Sub. *sɛ-* of *sɛ-ku* "child" <**isa-k'u*?; see no. 54.

Transitives in d-. It is not clear if every case of *d-* alternating with intransitive *g-* is to be interpreted as a transitive element. It is at least conceivable that where this *d-* occurs in imperatives or prohibitives (e. g. *da·tcu· d-u·ga d-a·gu·-lu·* "do not touch the fire!" *d-a·ya-lu· sεku·* "hold the child!" *d-a·ti* "espérese!") we are really dealing with imperative *da-*, though Lehmann says nothing to justify us in believing that this prefixed particle can replace intransitive *g-*. Fortunately there are other cases of *g-*: *d-* (e. g. *gu·ga* "to touch": *i·na gi·-du·ga* "cara tocada"; *goo*: *doo* "to squeeze out") which show that not all cases of *d*-forms from *g*-verbs can be explained as either nominal derivations in *d-* (see *g-apu·* "to sleep": *d-apa* above) or as imperatives in *da-*. We are practically driven to assume a transitive prefix *d-*. The evidence of the mass of *d*-verbs supports this view. This *d*-prefix is likely to prove identical with the verb *da* "to make" (cf. periphrastic use of *ni* "to make, do" in compound verbs), but it is evident that the *d*-forms must be of great age in any event. The examples are:

doo "to cease"
d-oo "to press out, squeeze out": *g-oo* "to winnow, filter"
dax̣kwa "to bake"
i·na gi·-du·ga "cara tocada": *g-u·ga* "to touch"
dia-ma "to put, place"; see no. 69
too (*gwa*) "to enter (the house)"
tax̣ia "to take grains of corn off of"
dantcax̣ku· "to tell"
da·ya "to find" (cf. *-ya* "to see," no. 76?)
da·tco "to hear"
da·tco "to knock"
ti·gu "to comb"
twi· "to suck at"
da·ɣma·ta "to open"
tiŋga "to roast"
(*i·ci·*) *gi·-du·wa* "(maíz) tostado"
na-data "to say, speak, talk": *na·-ata*, *na-to*
di·i "to peel (fruits)"
dandi "to blow at, soplar"
do·ko (*gwa*) "to close (the house)"; *dox̣ko* "to close, cover"
dω·si· "to deceive, tell a lie to"
na-deri·a: *n-eri·a* "to kill," *ra·bu· gi·-yeri·a* "killed person"
ḍwaco "to take away, pull out (e. g. hair)"
d-iax̣a "to desire": *ya·x̣a* "to think," *yax̣a-la* "to seek"
gi·-du·sna gami· "pelea(n)do, entre sí" (*gi·-* is past passive participle)

Such alternations as *-data* "to say": *-ata* and *-deri·a* "to kill": *-eri·a* seem to be transitive parallels to intransitive cases like *kuni·nu* "to sleep": *-uni·nu* (see above). In a number of cases the *d*-verb is intransitive in translation:

da·co "to get up"
diko "to appear"
da·u "to feel, feel to oneself"
da·u "to descend"
do·si· "mentiroso"
daẋka "to stink," *daẋku* "to smell, be fragrant"
da·wa, *da·gwa* "there is not": Sal. *k-awa* "to lack" (see no. 70a)
ta·u "to sit": Hokan **awa* (see no. 77)

Such intransitives may well be transitives, however, from the Subtiaba standpoint, e. g. *d-aẋka* "to have, make an odor, produce a smell," *d-a·wa* "to have a lack."

The class of transitives in *d-* cannot be definitely proved for other Hokan languages, but there are at least indications that it exists also in Washo, e. g.:

depu "to stab"
dalik "to strike, hit"
dabem "to strike, hit"
degem "to meet, come to"
daŋal "to hunt"
damal "to hear"

The last example is perhaps a transitive denominative from an old stem for "ear": **d-ammal* <**d-asmal* "to give ear" (cf. Sal. *p-esna-* "to hear, listen"?); see no. 7. Such consonantal alternations, moreover, as *-yam* (in *uga-yam* "to strike with a long object"): *dam* "to strike with a round object": *-bam* (in *dum-bam* "to strike with the end of a long object") and *lep* "to crush": *dep* "to crush with a round object", *-dip* (e. g. *de-dip* "to crush with the hand") may involve an old transitive *d*-prefix.

Other Transitive Prefixes. The common transitive *p*-prefix of Salinan has already been discussed. Outside of Salinan I find:

S. W. Pomo *p-akum* (or *pa-kum*) "to kill": C. Pomo *kum* (cf. Chim. *-ko-* "to kill"?)

but this example is too obscure and too isolated to count for anything. More suggestive is Washo *b-* in certain transitive verbs alternating with *g-*, *a-*, and other consonants, e. g.:

-bam (of *dum-bam*) "to strike with the end of a long object": *dam*, *-yam* (see above)
bipos "to pick up, raise": *gipus* "to lift," *u-lepus* "to lift"

What is almost certainly a transitive (causative) prefix, *s*,- *c*-, is found not infrequently in Subtiaba, nearly always before consonants:

s-tox̣ma "to bind"
s-kwamba, *s-gwamba* "to fell, cut (wood)": *gu·mba* "to divide"
(*ga-*)*s-pa·tu·* "to chop"
s-padiku· "to shake"
s-maŋga "to put on a load (e. g., child on one's back)"
c-kama "to reach"
c-no "to give"
c-kamo "to seize, hold"
c-nło·ta "to spit"
c-mi· "to sew" (<**s-ima-t*, denominative of **ima* "hair"?; cf. no. 52)
c-indiya "to gather, harvest"
c-kɛtcu· "to hunger"
c-ti·ya "to be ashamed"

A suggestive parallel example of what is perhaps a survival of causative *s*- may be found in Yana:

Yahi *-s-gan-* "to break" (secondary verb stem), C. Yana *-'-gan-*: *b-agan-* (or *ba-gan-*) "to be short" (originally "broken, fragmentary"?)

General Survey of Hokan Verb Class-Prefixes. The material that we have passed in review, scanty as it is, seems to leave little room for doubt that Hokan originally possessed a set of consonantal verb prefixes of a generic type. The elements that have the best claim to be recognized as archaic rather than as of secondary dialectic origin are:

m-, adjectival, (static intransitive)
t-, adjectival
k-, intransitive, (adjectival)
p-, transitive

Other elements, like transitive or causative *s*-, may well be equally archaic, but the evidence is too scattering to justify a definite statement. Salinan and Subtiaba seem to preserve the old system of prefixes as a live mechanism where the other languages can

HOKAN VERBAL CLASS-PREFIXES

	KAR.	*SH.-ACH.*	*CHIM.*	*PO.*	*YAN.*	*WAS.*	*ES.*	*SAL.*	*CHUM.*	*YUM.*	*SE.*	*CHON.*	*SUB.*
m- (adj.; static intr.			*m*- (adj.) (?)	*m*- (adj.; intr.)	*m*- (adj.; intr.)		*m*-	-*m*- (adj.); *m*-(adj.; intr.)(?)		*m*- (adj.) (?)	*m*- (adj.) (?)		*m*- (adj.; intr.)
p- (adj.)				*b*-, *p*-	*ba*-			——					——
t- (adj.)				*d*-, *t*-	*da*-	*d*-, *t*-		*t*-, *ṭ*-	*t*-(?)				*d*-(?)
l- (adj.)					——			*l* -(?)					*r*-,*ṛ*-(?)
s- (adj.)					——			*s*-	*ts*-(?)				*s*-,*c*-(?)
k- (intr.)				*k*- (adj.; intr.?)	——	*g*- (?)	*k*- (?)	*k*- (intr.; adj.)	*k*- (?)		*k*- (adj.)		*g*-
t- (tr.)					——	*d*- (?)		——					*d*-
p- (tr.)					——	*b*-(?)		*p̓*-					——
s- (tr., caus.)					-*s*- (?)			——					*s*-, *c*-

apparently show only survivals, but it is quite possible that if we had reasonably full data for Washo and Seri, we should have to number these among the archaic languages as well. The following table of the distribution of the adjectival and verbal class-prefixes is necessarily even more fragmentary than the corresponding table for the absolutive noun affixes. It is given rather as the statement of a fundamental and far-reaching problem needing investigation than as a satisfactory formulation of the facts.

The lack of entries for Karok, Shasta-Achomawi, and Chontal and the paucity of entries for Yuman and Chimariko prove little or nothing because for none of these languages except the last have I anything available but the most fragmentary material. However, it is clear that the characteristic development of intransitive and transitive class-prefixes which we have in Subtiaba and Salinan, and perhaps in Washo, is absent in Chimariko and Yana. It looks, then, as though it was the southern, rather than the northern, Hokan languages that best preserved the archaic features of the Hokan system of verbal class-prefixes. This accords with the greater conservatism of the southern languages in the use of absolutive nominal prefixes.

If we ruthlessly eliminate at this preliminary stage of linguistic inquiry all evidence that is weak or ambiguous, we can still rest a reasonable case for an old Hokan system of "classifying" or generic prefixes in the noun, the adjective, and the verb on the following condensed table:

	PO.	YAN.	WAS.	SAL.	CHUM.	SE.	SUB.
t- (nominal)			*d*-	*t*-, *ṭ*-	*t*-		*d*-
m- (adj.; static intr.)	*m*-	*m*-					*m*-
k- (intr.)	*k*- (adj.)			*k*-		*k*- (adj.)	*g*-
p- (tr.)				*p*-			

CONCLUSION: FURTHER VISTAS

On the basis of the evidence reviewed in the preceding pages it seems difficult to avoid the conclusion that Subtiaba is a Hokan (or "Hokan-Coahuiltecan") language and that, as such, it is genetically related to widely different languages spoken far to the north (e. g. Shasta, in northern California) and to the northeast (e. g. Tonkawa and Karankawa, on the Texas coast). This evidence is lexical, phonological, and, above all, morphological. The typical form of stem in Subtiaba is of a recognized Hokan pattern; the alternation of forms with and without initial vowel is characteristically Hokan. The old system of Hokan nominal, adjectival, and verbal consonantal prefixes, defining the most fundamental classificatory notions, had begun to emerge before the present study of Subtiaba was undertaken, but the new evidence brought by this remote language of Nicaragua and southern Mexico has clarified the picture appreciably. Much, of course, remains obscure and in many directions there is everything to be done.

But can we stop with Subtiaba? In a previous communication[20] I ventured to suggest that one of the major groups of American Indian languages is a large group extending east and west from the Atlantic to the Pacific. The name "Hokan-Siouan" was suggested for these languages. A tentative genetic scheme might be thus represented:

A. Hokan-Coahuiltecan
  I. Hokan proper
    1. Northern Hokan
      a. Karok; Chimariko; Shasta-Achomawi
      b. Yana
      c. Pomo
    2. Washo
    3. Esselen; Yuman
    4. Salinan; Chumash; Seri
    5. Chontal
  II. Subtiaba (and Tlappanec)
  III. Coahuiltecan: Tonkawa; Coahuilteco-Cotoname-Comecrudo; Karankawa

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[20] *A Bird's-eye View of American Languages north of Mexico,* Science, n. s., vol. LIV, 1921, p. 408.

B. Yuki
C. Keres
D. Atakapa-Tunica-Chitimacha
E. Iroquois-Caddoan
F. Eastern group
    I. Natchez-Muskogian; Timucua
    II. Siouan
    III. Yuchi

Such a scheme must not be taken too literally. It is offered merely as a first step towards defining the issue, and it goes without saying that the status of several of these languages may have to be entirely restated. Thus, Yuki is listed for the time being as coördinate with Hokan-Coahuiltecan, but it is not unlikely that it is really a specialized Hokan language which has undergone a great deal of phonetic decay and has been rather seriously influenced by contact with neighboring Penutian languages (Miwok and Wintun).

The evidence for this "Hokan-Siouan" construction is naturally morphological rather than lexical, though the lexical bonds that unite Natchez-Muskogian and Hokan, for instance, are by no means negligible. This evidence will be given in due time. It is of a general rather than specific nature, though specific elements constantly enter into the argument, and can hardly receive its due weight unless one contrasts the underlying "Hokan-Siouan" features with the markedly different structures that we encounter in Eskimo-Aleut, in Nadene, in Algonkin-Wakashan, and in Penutian.[21] There is now reason to believe that some of the more archaic elements and classes of elements that are found in Hokan-Coahuiltecan also exist as survivals in languages spoken far to the east. Some very suggestive evidence has recently come to hand, for instance, which seems to indicate that Natchez and the Muskogian languages originally possessed a system of consonantal prefixes analogous to the old Hokan system that we have discussed. Thus, Choctaw *laⁿsa* "scar": *miⁿsa* "to be scarred" is curiously reminiscent of such alternations as Subtiaba *d-aca-* "grass": *m-a·ca* "to be green" and suggests an old nominal prefix *l-* (cf.

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[21] The grammatical peculiarities of Uto-Aztekan are not so clearly differentiated from those of "Hokan-Siouan."

Chontal?) and an adjectival or intransitive *m*- (as in Yana, Pomo, and Subtiaba); for the latter element the evidence is already respectable. A surprising number of other consonantal alternations have been found in Muskogian and they present an important historical problem.

The example of Subtiaba is sufficient warning of the impossibility of drawing a preconceived boundary to the south. There is no reason whatever to believe that the "Hokan-Siouan" group as already defined will remain without further adjuncts in Mexico and Central America or perhaps even beyond. The addition of the Mayan languages seems rather more than less likely. To mention such possibilities is to make it clear that the real problems of American Indian linguistics have hardly been stated, let alone studied.

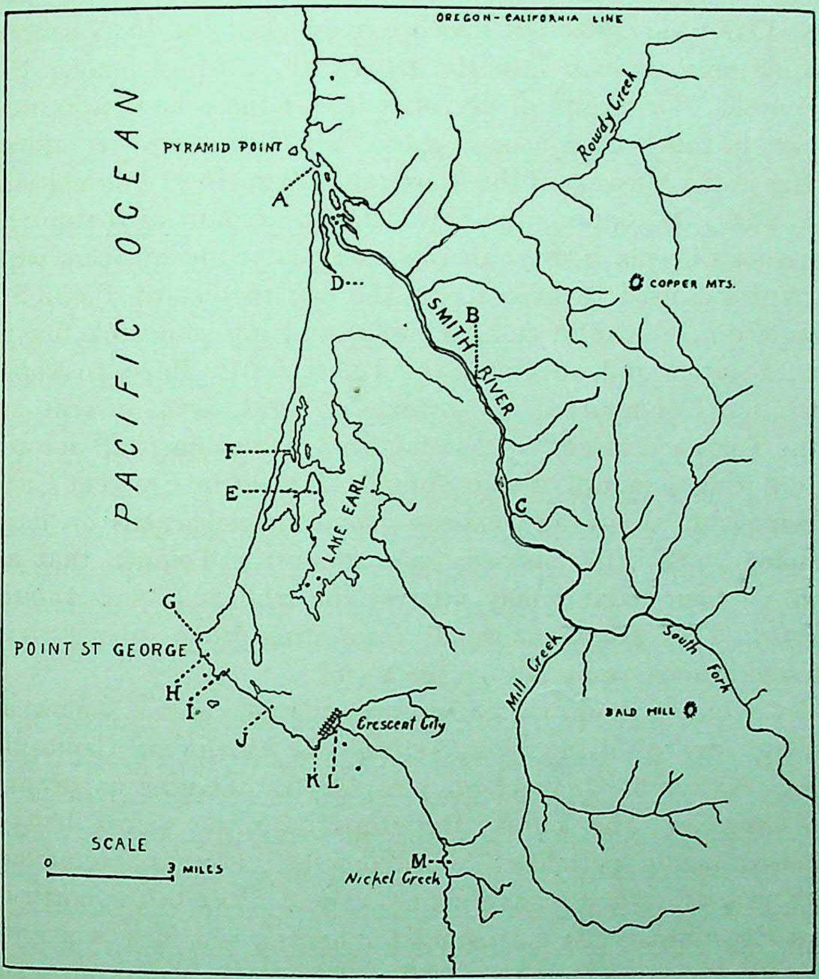
Victoria Memorial Museum,
Ottawa, Canada.

THE VILLAGE SITES IN TOLOWA AND NEIGHBORING AREAS IN NORTHWESTERN CALIFORNIA

By T. T. WATERMAN

IN THE year 1909 Dr. Kroeber dispatched me to Northern California to look into the native life existing among the Yurok. The fruits of my brief labors there have appeared in part in print, though one paper, "Yurok Culture," is still in storage in the Museum of the American Indian, Heye Foundation, New York. It contains the only detailed account of the northwestern California house. In the intervals of my business with the Yurok I used to look across the bay to distant Point St. George, dim, romantic and far away, and my soul took fire to wander thither and work with the Tolowa. Mr. Heye, to whose institution I committed my fortunes in 1921, actually sent me to the Tolowa territory to collect specimens for him, and accordingly during a month of that summer I lived in Crescent City, carrying out, at my own expense, some investigations on local ethnology. So little has been said about the Tolowa, that an essay on their habitat may interest the readers of the *Anthropologist*. They are an unusually interesting group, to me, very different in some respects from the Yurok.

Everyone, I think, is familiar with the fact that a somewhat peculiar way of living characterizes the northwest California tribes. Native life changes quite rapidly as one goes northward into Oregon. The Yurok, the Hupa, and the Karok have a somewhat highly specialized "house complex." For example, among the Yurok every house has a name. The Tolowa to the north of them have apparently no names for houses. In fact, when we leave the Yurok we have to pass almost to Alaska before we again find the custom of naming dwellings. There is, in fact, quite a sharp line both in this and in other matters between the Yurok and the Tolowa, although they live together on one stretch of coast. The Tolowa maintained close contact by trail over the mountains with the Karok, more so than they did with the Yurok who lived within view of them on the beach. "Money" made of *dentalium* shell which is an important feature of native life in Northwestern California, came to the Tolowa from Vancouver Island, was traded by them to the Karok, and then passed by the Karok to the Yurok. We may, however, pass by the whole matter of cultural relations, with the remark that when we go from the Yurok northward to the Tolowa we pass rapidly out of a highly developed California culture into the much more primitive culture of Oregon. Why the Tolowa and the Oregon tribes are more


OREGON-CALIFORNIA LINE
PACIFIC OCEAN
Rowdy Creek
PYRAMID POINT
A
D
SMITH RIVER
B
COPPER MTS.
F
E
LAKE EARL
C
G
POINT ST GEORGE
H
I
J
Crescent City
K L
Mill Creek
South Fork
BALD HILL
SCALE
0
3 MILES
M
Nickel Creek

Map illustrating the territory of the Tolowa Indians in northwestern California. Adapted from the United States Coast and Geodetic Survey, Chart 5702.

simple in their way of living I confess I do not know. The life of the Yurok exhibits many analogues with that of the distant Kwakiutl and Haida far to the north (and other North Pacific tribes). The "high" culture level is encountered in California but seems to vault over the Oregon coast tribes, reappearing and reaching a very high pinnacle in distant British Columbia and Alaska. This seems to imply some sort of a degeneration of culture among the Oregon tribes, for the high culture of California and Alaska must at one time have been continuous. A curious thing this is, and needs some sort of explanation.

Some years ago I became infected with a geographical bacillus and so when I arrived among the Tolowa in 1921 the matter which first claimed my attention was local geography. Several investigators had worked more or less with the region before I got there; Sapir, Goddard, Gifford, and especially J. O. Dorsey, who left some valuable geographical notes. The best account of Tolowa life is that of Stephen Powers. In fact, his is the only account accessible.[1]

The point of most interest for readers of the *Anthropologist* is perhaps the location of the Tolowa villages. I give herewith a list compiled with the help of native informants, adding for comparison the terms supplied in Dorsey's work and the names applied to these villages by the Yurok.

Comment. The "receptacle" mentioned in table I, under B, is a cooking-basket, made in a water-tight weave. The English term "*Bucket ranch*" is an approximate translation of the Indian name. Yontucket (D) the name of a village appearing on the local maps is a somewhat Anglicized pronunciation of the native name. Lake *Earl* of our maps is either a transliteration of the Yurok ErL, or Yurok ErL is the Yurok pronunciation of English *Earl*. The former seems to be the case. Tolowa Taγįą´te, "pointing sea-

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[1] E. Sapir, Notes on the Takelma Indians of Southwestern Oregon, American Anthropologist, n. s, vol. 9, 1907; Takelma Texts, *in* University of Pennsylvania Anthropological Publications, vol. 2, 1909; J. O. Dorsey, The Gentile System of the Siletz Tribes, Journal of American Folklore, vol. I, 1888; Stephen Powers, Tribes of California, U. S. Interior Department, Contributions to North American Ethnology, vol. 3.

I. NAMES OF THE TOLOWA VILLAGES

	English Names for the villages	*Names in the Tolowa language*	*Names in the Yurok language*
A	*Siesta Peak ranch*[2] at the mouth of Smith River.	xawɪnwet	Hi´nei
B	*Bucket ranch*, in the cañon of Smith River	xatsa´^{3}—xotδ´ttne, "receptacle below"	Mɪ´stɪks
C	Site up-stream from the last named on Smith River	Minitcᴇ´ntᴇn, "close to the hill"	Lδ´genδʟ, "where a fish-dam is customarily."
D	*Yontucket ranch*	Yδ^{n}-t´akit, "east, high in the"	Tola´k^{w}
E	A suburb of the above named town		
F	*Lake Earl Ranch*	E´tculɛt, "land great upon"	Erʟ
G	*Point St. George ranch*	Taγi´ą´te, "pointing seaward"	Knä´äwi, "extended"
H	*Saddle Rock ranch*	Sa^{3}staso^{n}´, "spoon-holder"	. . . .
I		Tatį^{n}´tɪ^{n}, ...	A´tägɛn´
J	*Pebble Beach ranch*	Mɛsʟteʟn, ...	Cä´coi
K	*Crescent City ranch*	Sɛ´: nɪñ hat, "rock flat"	Kδhpe
L	Another village just inside the promontory at Crescent City	Tata´ten, "in-a-corner place"	
M	*Nickel Creek ranch*	Cɪnya´tʟtci	Nɛkɛ´ʟ, "end of beach"
N	*South Fork ranch*	Nᴇmsδ´tᴇn, "houses there"	. . . .

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[2] Meaning "Indian village"; from the Spanish *rancheria*, meaning ranch buildings, offices and employees' quarters, the abode, literally, of the *ranchero*, or owner. The vaqueros and other minor functionaries were mostly Indians in the old days, and I presume *rancheria* thus came to signify an Indian settlement.

II. LIST OF YUROK TOWNS, WITH NAMES APPLIED TO THEM BY THE TOLOWA

Yurok names		*Tolowa names*	
aiqo´ʼo,	"basket"	. . . .	
otsepo´r	"where it is steep"	. . . .	
lo'ole´go	"where fish-weir they build"	. . . .	
oslego´its	"where it descends"	. . . .	
Osmemo´RL	"where it slides"		
weitspūs	"confluence"	LtcoilI´ntEn	"confluence place"
pɛkʷᵘtuL .	"pile of rocks"	kwɛ´sEtesa´wIt	"middle ridge"
rLrgr´	. . . .	t'oñcEn-mǫⁱtUn,	"myrtles, at end of something"
wa´hsɛk	. . . .	xaitutucitEn	"naming-is-forbidden place"
qe´nek	. . . .	to´nLtEn,	"tearing place"; *or* ce-LcIn, "black rock"
tse´tskwi		. . . .	
qe´nek-pul,	"down-stream from qe´nek"	. . . .	
aukweya´	. . . .	. . . .	
me´rip	. . . .	. . . .	
wa´ase	"poor"	nocusne´LtEn	"throwing in hearts"
ke´pel	"house-pit"	Esta´kιt,	"fish weir"
sa'a	. . . .	. . . .	
murek	"cooking basket" (?)	nonia´tEn	"end of a ridge"
himeL		. . . .	
we´ⁱqem		. . . .	
no´xtskum		cǫ-tc'awι´stEn,	" . . . . foaming place"
ke´peror		. . . .	

meta´		mɛ:ko´ntᴇn,	"a certain species of vine"
ke´ⁱkem			
srego´n		xage-xana´ʟtli,	"new settlement"
yo´xtr		. . . .	
pe kwan		γicete´tᴇn	"hopper basket"
qo´otep		saxo´tᴇn	"stream place" (the town straddles a brook)
wo´xtek		xaiᴇneni´ñcut,	"small creek half way"
woxke´ro	"laurel" (pepperwood)	. . . .	
otsä´ʟ	"where it is sandy"	. . . .	
tekta			
srpr		t'uasɛ´tᴇn	"big prairie on top"
ä´yoʟ		. . . .	
nagil		. . . .	
r´nr		sɛ-ɛkwᴇt,	"rock, village upon"
ho´wego		. . . .	
rli´i ken-pets		. . . .	
sto´wen		nucu-kwe´tc'ᴇsxu	"hiding a misdeed"
tu´rip		xakʷti̧´tᴇn	"blue berries"
sä´äʟ	"invisible people"	tciu³tʟitᴇn,	"invisible people"
trwr	. . . .	. . . .	
wo'ke'l	"pepperwood"	t'ǫcᴇntᴇn	"pepperwood place"
ho´'paʷ		tasni´ʟtᴇn	"stirring acorn mush place"
re´kwoi	"mouth of a stream"	tatcitᴇn	"steaming place"
tmr´i		k´ᴇsmɛ,	"alders inside"
weʟkwäʷ		hwᴇ´ngᴇnmɛ	"door, inside of"

tsekweʟ		. . . .	
o´men		tagɛʟtsa´atᴇɴ	“the land opens inward”
o´men-hipur		ts’idɛ-tcit	“elbow in” (i.e., “in an elbow”)
o´segen		xδstci´t	“breakers”
äspä´ʷ	“drinking place”	tce´tcᴇɴtᴇɴ, ...	
otmekwo´ʀ		. . . ;	
si´gwets		. . . .	
ore´qʷ		sus-nase´tᴇɴ	“wood drifting”
tsa´pekʷ		mᴇɴγᴇttcu´tᴇɴ	“gravel”
hrgwr	“large”	. . . .	
tso´tskwi		. . . .	
oke´to	“lagoon”	tcᴇsʟe’xtᴇm	“still water”
ke´ⁱkun	. . . .	. . . .	
oslo´qʷ		. . . .	
pä´’är		. . . .	
pi´ɴpa		. . . .	
mä´’äts		. . . .	
tsu´rai	“mountain”	ne´nιstᴇɴ	“smooth ocean”

ward," for Point St. George ranch, and the corresponding Yurok name knä'äwi, "extended," are both fairly descriptive of the site, which lay on the side of the promontory. Saddle Rock ranch (H) gets its Tolowa name "spoon-holder," as it got its English name Saddle Rock, from the shape of a bold headland, visible for miles, and almost entirely surrounded by the sea. An artificial excavation in its summit serves as protection from the wind. Girls used to go and sit there when they wanted to obtain supernatural help, meanwhile working at basketry. The English expression "Nickel Creek" (M) is a transliteration of the Yurok nεkε´ʟ, "end of the beach." None of the Tolowa towns were of any great size, even as compared with the Yurok settlements. The promontory, on which the Tolowa mainly lived, is a wind-blown and, to me, romantic spot, but did not offer a great deal in the way of subsistence.

Elsewhere I have published[3] a list of Yurok towns. The Tolowa terms for these Yurok settlements offer some points of interest.

Comment. The Tolowa name for Stowen in table II of towns refers to a mythical incident. Someone had a lot of human hearts. He piled them up and weighted them down with rocks. He could not hold them down. Then he put them in the river. They would not stay down. The fact that these hearts would not "stay put" is the reason why people today all think differently. Of the other town-names many are self-explanatory. A few are direct paraphrases of the Yurok names. For example, Weitchpec (or Weitspus) means "confluence" in Yurok, just as Ltcoilɪ´nten does in Tolowa, and the place known as Big Lagoon, in Yurok Okéto, "where the water is calm," is called by the Tolowa "smooth water." In most cases, the Tolowa names are directly descriptive. The place now known as Trinidad is called by the Yurok "mountain," because the cape there is an isolated conical knoll of rock connected by a low isthmus to the mainland. From a distance the knoll seems to stand by itself. The place is called by the Tolowa "calm ocean," referring to the still water of the harbor behind the cape.

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[3] *Yurok Geography*, University of California Publications in American Archaeology and Ethnology, vol. 16, 1920.

NAMES OF PLACES OTHER THAN TOWNS

Footsteps Rocks, north of Wilson Creek, taγenɛ-ni′^{i}tᴇn, "going-into-water place." Women were compelled to disembark, on approaching these rocks and to pass them on the inland side, over the trail.

False Klamath Rock (Yurok rlrgr), wᴇṭc' atagasni, "digging something." People used to go here to dig up edible roots, called locally "Indian potatoes." Berries were gathered here, too.

A place called by the Yurok tahto′ sits, on the Lockwood place, where the trail to Requa from Wilson Creek climbs on top of a high hill, tca′yatʟɪʟ, "wind taking off one's clothes." Legend says that the wind blew so hard here once, that it blew a woman's dress off.

A ceremonial rock at Requa (called in Yurok Orego′s, "where they customarily land") yaasti′kwᴇt, "do not touch with a pole." A supernatural being lived in this rock.

The landing-place at Requa village (called in Yurok otse′gep, "where they customarily disembark") sixatxᴇ′stᴇn, "disembarking place."

The principal mountain peaks in Tolowa territory follow:

1. The northern peak of what are called "*Copper Mountains*" on our maps, E′tʟkwaket, "resin on top."

2. An elevation entered on our maps as "*Bald Hill*," now known as Murphy's ranch, Mᴇn-t‘ u′tem, "bare mountain." The Tolowa went thither every spring to pick acorns.

3. A row of peaks called on our maps "*Four Brothers*," in Tolowa Nee xotinʟtɛ, "*four sisters*."

4. An elevation called by the whites "Bear Mountain" (otherwise known as French Hill), A′n-towai, "hill big." This is a famous spot in Tolowa mythology.

5. A hill shown on our maps as Preston Peak, called in Tolowa GEtLgi′st-hu, "kelp . . . ." There is said to be a lake at the summit *with kelp in it*, showing a connection between the lake and the ocean. I should like to have a dollar for every such lake that has been pointed out to me by Pacific Coast Indians.

GEOGRAPHICAL IDEAS

The description elsewhere given (in the author's paper already cited) concerning the geographical ideas of the Yurok applies rather closely to the Tolowa. They have a similar notion concerning the nearness of the sky, which is thought to be a solid

III. Names for Native Groups

English	*Yurok*	*Tolowa*
Hupa	Hupa-lä	Kw'a´iꜱta, "behind sitting"
Takelma ("Waldo Indians")	. . . .	Kǫstʟδt'ɛ´nɪ
Karok	Ko´omets	Tc'o´nɛ (applied also to the Shasta)
Chilula	Tsulula´i (Tsulu. "Bald Hills")	K'ontsi´nɛ, "tattooed all over the face"; also called Kw'aiᴇ xaiti "staying on top of the hills"
Wiyot (or Wishosk)	We´yet	Weya´teni
Yurok	. . . .	Tɛ´tʟmɪꜱ; also Tatcita´ni, "Klamath people"
"White people" (Americans)	Wδγe, "immortals"	Natʟmɪ´nti
Eel River Athabascans		Tcwata´γɪnli, "big river people"
Rogue River Athabascans (north of the Oregon line)	. . . .	Taxo´-xᴇci, "north people"
Illinois River people	. . . .	Tʟocle´bɛ

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vault. Their land of the dead which they call Tą^{n}nį^{n}ta′$^{h\sigma n}$, lies, however, across the ocean to the westward, while for the Yurok the land of the dead is underground. In order to get to the village inhabited by the dead souls, according to the notion of the Tolowa, one crosses a river in a boat which has only one side. If the dead people are not willing for the newcomer to join them, they refuse to ferry him over. In that case, the newcomer is obliged to come back to this world; that is, he "comes to life." It is noticeable that the Tolowa, like the Yurok, have few if any names for streams. They describe a watercourse by calling it the stream which flows by such and such a spot. As was found to be the case with the Yurok, the geographical names group themselves very conspicuously along the shores. Very few names are found inland.

My Tolowa informants who lived at Crescent City, in the present town, spoke of themselves as Tata′tEn-xEcli, "in-a-corner-place people" from the old village site Tata′tEn, inside of Battery Point there. The native names for the various groups in the nearby region are given in table III:

The exact location of the frontier between the groups, particularly the Takelma and Chasta Costa, is a matter that has been somewhat violently mooted. The two principal authorities are J. O. Dorsey and Sapir. The matter is rehearsed rather carefully by the latter author, in the papers already cited.

The problem over which these authorities labor rises from the fact that J. O. Dorsey succeeded in recording Athapascan names for the Takelma villages. Dorsey explains this by devising a theory that certain Athapascan groups invaded the territory of the Takelma, and imposed a series of names in an Athapascan tongue on the enemy settlements. Sapir feels sure that Dorsey is wrong; that the latter's Athapascan informants merely clothed the names in an Athapascan garment in place of giving them properly. Meanwhile, it is a positive fact that every group in this region has a series of names in its own tongue, for all the towns and other important places, in the territory of each of the neighboring tribes. Thus the Yurok have their own Yurok names for the Hupa towns, and vice versa; and the matter is also illustrated in the list above. For that matter, this custom is perfectly well known in other regions: the Zuñi, for example, having their own names for each of the Hopi villages. It can be expected *a priori* that any Athapascan group in California will give Athapascan names for any series of towns which they are acquainted with.

The boundaries or frontiers between the Oregon groups were worked out by me, with more or less accuracy, on a map, which represents a judicious compromise between the positive but contradictory statements of Dorsey and Sapir, and my own data collected on the spot.

The location of the Tolowa frontiers is a somewhat simpler matter. Their northern boundary was practically the Oregon-California line. They extended down the coast as far as Cushion Creek, where they met the Yurok. Two small towns on or near the boundary had a population of about half Tolowa and half Yurok. Inland, the Tolowa were separated by ranges of mountains from the Takelma, with whom they had little contact, excepting occasional raids back and forth. Well-travelled trails led over the ridges to the upper portion of the Klamath River, inhabited by the Karok, with whom the Tolowa had constant dealings. North of the Tolowa are the Chetco, speaking a slightly divergent dialect north of them the Pistol River people, with a dialect still more divergent, and north of these the people of Rogue River. The culture of the latter is vastly different from that of northern California. On the Rogue River the women wore a skirt of shredded bark in place of the buckskin dress, fringed, tasselled, and ornamented with shells, worn by Yurok women.

NAMES OF THE ATHAPASCAN VILLAGES IN OREGON

During the jaunt into Athapascan ethnography just described, I made a survey of geographical names, as best I could, northward past Chetko River, Pistol River, and Rogue River, to Port Orford, Oregon. Work of this sort is difficult in this region. There was a Rogue River "war" and all these Indians were cleaned out by troops and taken to Grande Ronde and Siletz reservations in northern Oregon. Information can therefore be gotten only piecemeal. Two investigators preceded me in this field, J. O. Dorsey and Paul Schumacher. Dorsey mentions having made for the Bureau of Ethnology a map showing several hundred villages in this region, his information being based largely on inquiry made at Siletz. During a brief appointment with the Bureau in 1922, and afterward, I tried to get a view of this map, but Dr. Fewkes reported that the Bureau knew nothing of it. However, it is to be hoped that this exceedingly important available document may yet be brought to light. In the meantime, Dorsey's paper in the *Folk Lore Journal* remains the most important source of information concerning the Oregon tribes.

Some of his geographical names correspond with those recorded by myself at a much later time, and the two lists confirm each other in many ways. I obtained translations of some names which he leaves untranslated. After going over the country, it seems to my mind that a large number of the names he supplies are not after all the names of villages. At any rate, the number of villages located by me is very much smaller than the number listed in Dorsey's article. His list is certainly inordinately long. In regard to some particular cases, I know that he is mistaken, for he describes places as villages which were not places of settlement at all. On the other hand, it must be admitted that he worked forty years before I did, and inquiries were much easier to make in his day.

NAMES OF THE OREGON ATHAPASCAN VILLAGES

Old village-site at the mouth of Sixes River seven miles north of the location of the town of Port Orford, Kusúmɛ.

A village-site north of Euchre Creek, Gwᴇsa′ L-hᴇnlᴇn, "mussels good there."

An old village-site north of the mouth of Rogue River, Tcɛ′mɛ, "ocean in"; marked by a fairly extensive shell-mound on the tip of the promontory at the northern side of the river, at its mouth (fig. 4). (Dorsey, p. 233, No. 10, Tce-me, "people of the ocean coast.")

An old and important village near the mouth of the Rogue River, on the north bank, Tu′tu-tᴇn, "lagoon place." (Dorsey, p. 233, No. 13 Lu̯′-tu, "people close to the water").

A village-site close to the preceding, Na′gᴇt-xe′tᴇn, not translated.

A very important old village-site, about 12 miles up Rogue River, Mιkwano′tᴇn, "white clover place." This site was known after the coming of the whites as *McGuire's*. The element ml- is said to mean "on one's back" (Dorsey, p. 233, No. 16, Mi′-ko-no′ɟûnnĕ "people among the *white clover roots*.")

A village-site opposite that just mentioned, gwᴇse′tᴇn, "yew place." This native term has been corrupted into *Quosatana Creek*, which appears on the modern maps. (Dorsey, p. 233, No. 18, Kwus-setun.)

A village-site on the north side of the river, near a big rock, on a point of land, in a bend of the river, Se-Lxa′t:ᴇn, "rock slippery." This rock was once, in the Indian belief, a person. On the face of this rock, near the river, are some petroglyphs, covered with patches of moss. This is the site of the present town of *Agness*, spelled with a double *s*. (Dorsey, p. 233, end of paragraph Çĕcl-qût ɟun′nĕʻ "people at the smooth rcck.")

A village-site in the point of land between two streams, where the Illinois River joins Rogue River, ᴛLe′gᴇt-ᴛʟιntᴇn, "confluence flows." (Dorsey, p. 233, bottom, Kçe-lût li′ɟûnne, "*people at the forks*")

A village-site on the south bank of Rogue River above the mouth of Chasta Costa Creek, Yᴇtci′′wᴇt or Tatcī′kwᴇt, "tail-feathers upon." There is a flat and fanshaped point of land, inclosed between the creek and the river which suggests the tail of a bird. (Dorsey, p. 234, No. 1, Ta-tci′-qwût, "*Plateau people*") His translation is a hasty approximation of the one I obtained.)

A village-site at a place in Rogue River now known as Big Bend, Se-ϵ′ʟtanitcu or Se-ϵ′ʟtᴇn, "Rock among large" also translated "rocks where one lands a boat." The river here comes tumbling through enormous boulders. Boats could not pass above this point. Beyond this lay the territory of the Takelma (Dorsey, p. 233, bottom, Se-ecl unne, "*People using salmon weirs*").

An ancient village-site on the promontory west of the present settlement at Gold Beach, Na′gᴇt-xe′tᴇn, not translated. Dorsey locates a village here which he calls skû-mê-me. This latter is the name for Hunter's Creek in my notes.

Village-site under a promontory on the north side of the mouth of Pistol River, Tcϵtle′s-tcᴇntᴇn, "crag under." There is a large shell-heap here, examined by Schumacher in 1899 and mapped by him. The crag is sometimes called Eagle Rock.

A village-site at the first bend as one ascends Pistol River, Aɜ ene′tᴇn.

Old village-site at Crook Point, E:nasᴇt, "Land in front."

An old village-site at the mouth of Thomas Creek, Xustɛnɛ'tᴇn, "gravel place." This word appears in the books in the anglicized forms *Hustenate*, *Wishtanatan*, and *Whistle-latin*.

A village-site inward from a great sea-crag, at the mouth of Whalehead Creek, Xainᴇñgi'nte'tᴇn "people all departed." This settlement had another name originally, but I do not know what it was.

An important village-site south of Cape Ferrelo, Naʟtene'ten. The element *tene* means "trail-place."

An old village-site lying in the first cove north of Chetco River, K'alu'-kwᴇt, "baby basket upon." This was the most important village in the Chetco area.

An old village-site at the mouth of Chetco River, Na'gᴇt-xe'tᴇn, not translated.

A village-site on the east bank of Chetco River, T'acų-tan-cutlɛ'tᴇn, "pepperwood nuts drifting in under something."

Another village, directly across (west) from the preceding, Çlç-kas-li'tᴇn, "clay goes-up where." The village was on a little plateau, bounded by a clay bank.

A third village close by the other two, between the forks of the main stream, Tunɛ'stᴇn, not translated.

A village-site at the mouth of Chetco River, on the south side, Tci'txo. This term is said to be connected with the word for the tail of a bird. A village on Rogue River has a similar name. This native term has given rise to the modern name of the river, *Chetco*.

An old site, said to have been inhabited at one time, on a rock on the mouth of Winchuck River, k'osą' tąn-icut-s'a, "right at ocean there."

The old village at the mouth of Winchuck River, Kɔsątᴇn, "evening" This is a "bad" name, for mentioning the word "evening" is likely to shorten the day. For this reason, this village was often spoken of as Tusxo'tsitu, "do not mention it." It lay on the promontory south of the mouth of Winchuck River.

The following additional names appearing on the modern maps of this region are of Indian origin, and may have some interest.

Quostana Creek, (gwᴇse'tᴇn, "yew place"; Dorsey: Kwus-se'tûn, not translated).

Sixes River, native term Sᴇkwe'tcɛ, not translated.

Euchre Creek, native term Yu′kwi, "mouth of a stream."

Joshua Indians, a borrowing of the native term Yɔcutci'-teγɔnɛ', "River-mouth north," the old name of the point at the north side of the mouth of Rogue River.

Emah Creek, in the Chetco language, Eme′xu-tcɛt, Mt. "Emily stream."

Mt. Emily. The native term is An-mai, "earth undulating." I think that "Emily" is the native word in Anglicized form. It is the scene of an important flood myth.

Tones are very plainly heard in Tolowa words. I am sorry I cannot give an account of them. They are particularly conspicuous on account of the contrast with Yurok. It is curious to observe that these adjacent languages show the two contrasting phonetic types, Yurok with vowel-harmony, Tolowa with tones. I think it more than likely that all the tone languages of America are related. A man possessing accurate knowledge like J. P. Harrington, of numerous dialects, could easily settle the matter if someone would put him at it. The languages showing vowel harmony I would also suspect to be related among themselves. In view of the well-known migration of cultures and myths from Asia, I see no reason why a little independent study should not show the vowel-harmony languages to be related to Mongol-Turkish and the tone languages to Chinese. The evidence connecting Yurok with Mongol seems about as good as that on which Powell established his famous and sacred classification of fifty-five stocks. The recording of American languages has been phonetically inadequate; otherwise I think the broad relationships would have been observed long ago.

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MAYA INSCRIPTIONS: FURTHER NOTES ON THE SUPPLEMENTARY SERIES

By JOHN E. TEEPLE

IN A previous article[1] I was able to show the method of reading and the meaning of Glyphs C, D and E of the Supplementary Series. Glyph D shows the number of days that had elapsed since the last point of observation of the moon (presumably the new moon) provided the days are less than 20; Glyph E records the days in case they are 20 or more, E itself representing 20; Glyph C records the number of complete lunations in addition that had elapsed since the end of the last moon group (of 5 or 6 lunations). Ample proof was presented in the case of Glyphs D and E, but in the case of C we have only some examples, and the inference of extreme probability, but no actual proof. I think, however, that we can tentatively accept the reading of Glyph C also with perfect safety.

The next step was to apply the above readings to various inscriptions and see what could be developed. First, did the Maya exhibit the meticulous accuracy that some writers would have us believe? I think not. Stela 12 at Copan states that the date 9.10.15.0.0 occurred 3 days after a new moon, while Stela 13 Copan gives 9.11.0.0.0 as 5 days after a new moon. It is hardly likely that both statements are correct. If the last date was 5 days after a new moon then the first was probably 6 days after instead of 3 days.

More definitely, take date 9.16.5.0.0 which Stela J at Quirigua says occurred 4 days after a new moon. Stela M at Copan gives the same date as 5 days after a new moon.

Again, 9.16.10.0.0 is given by Stela N at Copan as 1 day and by Stela 1 at Yaxchilan as 3 days after a new moon. Stelae 24 and 29 at Naranjo give the date 9.12.10.5.12, respectively, as 18 and as 19 days after new moon. Stela J at Copan and 4 at Piedras Negras give 9.13.10.0.0 in one case as 18 days and in the other as 20 days after new moon.

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[1] American Anthropologist, 1925, pp. 108-115.

These discrepancies are not large, only 2 or 3 days at most, but they serve to show that absolute accuracy to a day is too much to expect from a people in their state of development and with their means of recording and filing data. We may assume that they could observe the new moon accurately enough, but a 2 or 3 day inaccuracy in their calendar count was not uncommon, and in fact is exactly what we should expect. I think we may safely assume too that they had means of checking the calendar count at frequent intervals, by observation and computation, so that except in times of war or great public disturbance the calendar variation rarely exceeded a couple of days.

The age of the moon in days seems to have been a matter of considerable interest and importance to the Maya for we find several references in the inscriptions to moons of the same age. For example, Stela 3 at Piedras Negras reads in part

> "9.12.2.0.16.5 Cib 14 Yaxkin, 27 days after the second lunation after the end of a moon group, is the same moon day as katun 12."

Now Katun 12 is shown by Stela 37 at Piedras Negras (courtesy of Dr. Sylvanus G. Morley) to be 28 days after new moon. We assume that the former date represents 27 days of a 29 day month and the latter 28 days of a 30 day month, i.e. the moon was the same age in both cases. We read further on Stela 3 above

> "12.10.0 (from 5 Cib 14 Yaxkin) is 1 Cib 14 Kankin, also the same moon day as Katun 12; 1.1.11.10 (after 1 Cib) is 4 cimi 14 Uo."

Here a statement is made about the moon day which I cannot yet read, but the inscription no longer states that it is the same moon day as Katun 12 because at this point we are about 6 days short of that age. No moon days appear in the rest of the inscription and no others are reached by the dates.

Stela I at Copan is another interesting one. It reads in part

> "9.12.3.14.0 5 Ahau (8 Uo) is a new moon day 4 lunations after the close of the last moon group. 10 Ahau 13 Chen (9.12.7.4.0) is also a new moon day the same as Katun 12 (or Katun 6) was. 10.8 (from 10 Ahau) is 10 Lamat (16 Pop 9.12.7.14.8)."

The rest is obliterated or I think we should find it explained that 10 Lamat was also a new moon day. Apparently according to the Copan calendar the end of Katun 12 (or 6) was a new moon day. We saw above that according to the Piedras Negras calendar the new moon did not come till a day or two later than Katun 12. 9.12.16.7.8. 3 Lamat 6 Yax on Altar K at Copan is the only other initial series date so far found in the inscriptions, with the exception of two or three hotun endings, which occurred on a new moon day. Consequently these two dates 9.12.3.14.0 and 9.12.16.7.8 with two or three hotun ending dates in addition are the only initial series dates among more than a hundred known ones which could possibly have commemorated an eclipse of the sun. From the position of these two dates in the Tzolkin however, day 200 and day 68 respectively, it does not seem probable that an eclipse occurred on either date. Nor is it probable for the same reason that any initial series date represents an eclipse of the moon although several of these dates occur 14 or 15 days after a new moon.

The Maya Tzolkin becomes a beautiful instrument for following eclipse dates if we have any fixed starting point, and I think we have one in Dresden Codex pages 51-58. Taking the table as finally worked out by Prof. Willson and Dr. Guthe, the zero day is 11 Manik, day 167 of the Tzolkin; the first group of 6 moons ends at 6 Kan, day 84 of the second Tzolkin, or day 344 if we number consecutively through a pair of Tzolkins; Group 2 ends at 1 Imix, day 1 of the third Tzolkin, then follow in order days 149, 326, 503, 161, 338, 515, etc. If we plot them all we find the whole 69 dates falling into 3 groups. The first group of 23 dates (or 24 if we include the zero date) lie between days 149 and 183, and center around day 166; the second group of 23 dates lie between 322 and 353 and center around day 339; and the third group between day 496 and day 10 of the next Tzolkin and center around day 513. Now if we are right in assuming that this table in the Dresden Codex represents a possible eclipse calendar, then days 166, 339, and 513 of the Tzolkin must be the days when the sun passed the moon's nodes, and at the date of the calendar no eclipse either solar or lunar could have occurred except within an extreme limit of 18 days on either side of day 166, 339, or 513. Lunar eclipses would of course be within the narrower limit of 13 days.

This agreement between eclipse seasons and Tzolkin becomes easily understandable when we remember that the average eclipse half year is 173.31 days, and that 3 such periods require 519.93 days, just .07 day less than 2 Tzolkins. The discrepancy between average eclipse periods and Tzolkin then is slightly less than one day per katun. If day 166 of the first Tzolkin was the day when the sun passed the moon's nodes around 9.16.0.0.0, then about 9.17.0.0.0 the sun would pass the node on day 165 for a katun, and at 9.18.0.0.0 days 164, 337 and 511 would be the node days. In the other direction no date near, say, 9.11.0.0.0 could possibly be an eclipse day unless (a) it was within 18 days of day 171, 344 or 518 for a solar eclipse or within 13 days for a lunar eclipse; and (b) it was on a new moon day for solar eclipse or 15 days before or after new moon for lunar eclipse. This rather definitely narrows the field and may possibly lead to the identification of some secondary series date as the record of an eclipse and so give another aid to the correlation of the Maya and Christian calendars.

We know from two monuments (Stela M Copan and Stela J Quirigua) that a new moon occurred on 9.16.4.10.8 or within one day of it, and Stela M also shows a moon group ending at 11 Manik 9.16.4.10.7. It seems altogether probable that 9.16.4.10.8 was the zero day or beginning day of the table in Dresden Codex. All three of the correlations discussed by Prof. Willson[2] are partly based on an eclipse Syzygy at 9.16.4.10.8 and this seems a necessary condition of any final correlation; of course it is not a sufficient condition. On the other hand a correlation such as that so carefully worked out by Dr. Spinden[3] which places the date 9.16.4.10.8 on a day where there is no ecliptic conjunction within 40 days and not even a new moon within about 10 days cannot possibly be correct to a day.

The arrangement of the moons in groups of 5 and 6, to end on possible eclipse dates as shown in the Dresden Codex was apparently a recent discovery. Throughout the inscriptions the moons are arranged in groups of 5 and 6, but the five groups are apparently about as numerous as the six groups, and in the inscriptions there is no apparent attempt to have the moon groups coincide with the eclipse seasons. In the inscriptions moon groups end promiscuously on almost any day of the Tzolkin instead of hovering near days 166, 339 and 513, as they do in Dresden Codex. Only in two cities, at one particular time do we find any series of monuments following the Dresden Codex Table. This is at Copan where the four latest initial series (Stelae D, M and N and Temple 11, 9.15.5.0.0 to 9.16.12.5.17) all conform fully to the Dresden Codex method, and at Naranjo where also the four latest ones (Stelae 30, 13, 14 and 8, 9.14.3.0.0 to 9.18.10.0.0) conform fully. This is hardly sufficient evidence to link the Dresden Codex with Naranjo or Copan, but it is the only indication that I have been able to find so far. The method of the Codex was not in use in Naranjo in 9.13.18.4.18 (Stela 23) nor at Copan in 9.14.19.8.0 (Stela A), but every later legible series in both cities conforms closely with the Dresden Table. What method of grouping the moons was followed in these two cities before the dates given, or in other cities like Quirigua, Piedras Negras, Yaxchilan, Palenque, etc., at all times has so far eluded me entirely. Alternate arrangement of a five and a six, or two fives and two sixes, or six fives and five sixes are all indicated, but indications derived from any one group of monuments fail completely when applied to another series of inscriptions.

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[2] Astronomical Notes on the Maya Codices. 1924.

[3] The Reduction of Maya Dates. 1924.

In addition to the period 1.13.4.0 which apparently was in use before its adjustment to eclipses according to the Dresden Table, the Maya had a number of other convenient approximations for computing a new moon day; for example a tun and a Tzolkin 1.13.0 is a very close approximation to 21 lunations; five tuns and a kin 5.0.1 for 61 lunations; a katun and five kins 1.0.0.5 for 244 lunations. All these or multiples of them will be found in use in the inscriptions. The figure 11.11.13 written on a shield next to a moon ending sign on the inscribed stairway at Palenque (Maudsley *4*, 23) is no doubt meant for a period of 142 lunations and is one third of a longer 426 lunation period 1.14.17.0, just as 11.1.6 for 135 moons is one third of the longer Dresden Codex period 1.13.4.0 for 405 lunations.

SUMMARY

1. An error of 2 or 3 days in the Maya Calendar was not uncommon.

2. The age of the moon was a matter of interest and note.

3. It is probable that no initial series date is the date of an eclipse (Day 9.17.0.0.0 is the only possible exception so far found).

4. The Tzolkin is shown as a very suitable instrument for following eclipse seasons through years.

5. Moon and eclipse season data now known in Maya Calendar terms may be used to check any proposed correlation between Mayan and Christian chronology.

6. Thus far the Dresden Codex moon-eclipse Table has been found in use only at Naranjo and Copan, and there only after 9.14.0.0.0 to 9.15.0.0.0.

7. Since the Maya Calendar was not uncommonly subject to a 2 or 3 day discrepancy even in the time of the Great Empire, it seems too much to expect that it could have maintained accuracy during all the centuries of disturbance and decline that preceded the arrival of the Spaniards. This makes it seem very doubtful that any exact correlation of Mayan chronology with our own can be derived from the Mayan dates as they existed in the years after 1500 A. D.

8. Any correlation must account for a new moon on day 9.16.4.10.7 or the day after, and also, in all probability, for an ecliptic conjunction on that date within two days after the sun had passed the moon's node.

NEW YORK CITY.

THE METAL INDUSTRY OF THE AZTECS

By GEORGE BRINTON PHILLIPS

I

THE collections of many thousand copper objects, tools, weapons, and ornaments from ancient Indian burial mounds and village sites in the Unites States of North America is strong evidence in favor of a pre-Columbian copper industry with which the aborigines were familiar before they reached the Iron Age. Did this knowledge and use of copper extend into Mexico and adjacent country of Central America?

Prescott in his *Conquest of Mexico* gives a picturesque account of the splendors of the court of the Montezumas with its silver and gold ornaments and utensils, but the knowledge of metals does not seem to have extended to the general use of copper or bronze for tools and weapons. The Aztec in the production of ornaments in the precious metal showed great skill and artistic workmanship and specimens sent over to Spain were greatly admired by the Spanish goldsmiths. Owing to scarcity of copper in their immediate vicinity, the ancient Mexicans confined its use to adze blades, chisels and some copper objects, possibly ceremonial implements. The tools were hardened by hammering and used in wood carving. The stone cutting it is believed was still done with flint tools.

Copper was obtained from the mines of Zocotallan where it occurred in masses on the surface and also from the galleries opened in the rock. Ancient workings have been discovered at Cerro del Aguilar in Guerrero, and the Zapotec country was well known for its copper mines. Deposits of tin were also found in Guerrero at the mines of Tasco, and it is said that Cortez obtained enough tin from that source with the copper to cast several large cannon, which he used in his fortress at the siege of Mexico. This use of tin in making a suitable alloy it is believed was due to the familiarity the Spaniards had of bronze, rather than to Aztec knowledge of the art.

The Aztec people had, however, some knowledge of metallurgy, for they melted the copper and cast it in moulds, an art which the aborigines in the United States never seem to have acquired. Cortez tells us that in the markets of the City of Mexico

> "hatchets were sold made of copper alloyed with tin and that this alloy was used with a silicious powder with which they cut the hardest stones."

The Spanish historians speak of Cholula, a very ancient City of Mexico, founded before the arrival of the Aztec, which excelled in metal working, and that the Tarascans living west of the valley of Mexico were familiar with copper found in the mountains in that district, which they worked into defensive armor, body plates of wood covered with sheet copper. They also state that the Zapotec made ornaments of copper obtained from the mines in Oaxaca.

Copper implements, however, were not common near the City of Mexico but were plentiful in Oaxaca, Michoacan, and the Jalisco region. The T-shaped implements were found at Mitla, Central America, being abundant in the Zapotec country. The objects, some made of very thin sheet copper, others heavier, possibly cast, are of uncertain use; those too thin to be used as tools for wood or stone, are thought to be instruments used in their feather work or pottery, others regard them as a money currency or exacted as tribute paid to the City of Mexico by the neighboring cities, this latter being the general opinion.

The number as well as the variety of copper objects from Mexico found in our Museum collections, is rather limited, consisting of a few copper ax heads, chisels, large and small, little bells, finger rings, beads and pins. The peculiar T-shaped objects are the most abundant, differing somewhat in shape and size. An analysis of one of them in the Peabody Museum at Cambridge, proved it to be simply copper. It was doubtful if the ancient Aztec had a knowledge of bronze or knew how to obtain it until shown by the Spanish invaders, and such analyses of Mexican metal objects, giving a percent of tin to indicate a true bronze, may have been implements made after the instruction by the Spaniards. Some copper tools from Mexico when analyzed showed a small amount of tin believed to have been an impurity in the copper ore. A chisel reported in the "Anales del Museo de Mexico" quoted by Sir John Evans, in his *Ancient Mexican Implements* when analyzed gave copper 97.87%, tin 2.13%, not sufficient to make a true bronze. Copper axes from Oaxaca, some heavy metal, apparently cast in a mould, others thin, shaped from sheet copper, have been analyzed and yielded only copper, showing they were *not* bronze.

A recent analysis was made for the writer of a portion of a metal chisel of Aztec origin from the village of Acatlan, in the State of Guerrero, Mexico. It was doubtless authentic being sent by Dr. Manuel Gamio, Direccion Anthropologia, Mexico, for analysis, which was made by Dr. D. L. Wallace of the University of Pennsylvania, Analytical Department. The piece of metal apparently broken from the middle of the chisel weighed 88 gms. It was 30 mm. long, 20 mm. wide and 15 mm. thick. It had a brown patina of oxidation, gave clean metal borings (used in the analysis) of dark red bronze color, and had the appearance of having been cast in an open mould. The specific gravity of the metal was 8.00 compared with Lake Superior native copper 7.50. The analyses yielded results as follows:

Copper	91.40%
Tin	3.07%
Lead	0.82%
Iron	0.53%
Cobalt	0.09%
Sulphur	0.82%
	96.73%
Thallium	?

Other metals often associated with Copper were tested for and not found, but tests indicated Thallium. This element Thallium occurs in some copper ores in Mexico as the mineral Crookesite, a copper Thallium selenite sulphide; and it is believed the portion unaccounted for in the analysis was due to the Thallium.

The little copper bells in the Museum collections seem to have been found in Mexican sites as well as in Central America, and are quite abundant in some localities. Some of these bells were about one half to three-quarters of an inch long, others of more than two inches and of different shape.

S. G. Morley in his description of Copan says:

> "The discovery of copper bells of Mexican origin at a number of archeological sites in Arizona and New Mexico clearly point to trade relations between the Pueblo Indians and the tribes of Central America in pre-Columbian times; these bells very closely resemble the copper bells found in the sacred Cenates of Chichen Itza, Yucatan, which can hardly have been carried there before 1200 A. D.

Analysis has proved these metal bells to be copper with some little impurities; and it is believed they were cast by what is known as the *cire perdue* process. This method consists in using a wax model, or a core of clay covered with a wax pattern, the mould being heated, the wax melted and ran out, leaving the shape of the object to be cast, which was then filled with the melted metal. This is interesting because this process was well known to the makers of bronze ornaments in Europe, and it is a question if these little bells found in the Aztec or Maya burials were made by the *cire perdue* process; was it a discovery by the American race independent of foreign knowledge?

This might suggest a greater antiquity for this art of casting than that in Europe and would show a considerable amount of experience in metallurgy for the aborigines, and it is surprising that more elaborate objects were not made by them. Judging from the character and variety of cast objects of bronze from South America, the ancient Peruvians were familiar with the *cire perdue* method. Did the Inca discover it? They were certainly the earliest users of the alloy bronze in America with the exception of the unknown builders of Tiahuanaco, among whose ruins have been found bronze tools. With regard to the knowledge the Aztecs had of bronze, it is difficult to establish their claim until more analyses are made of specimens of undoubted Mexican origin, indicating an alloy with a composition of about 90% copper and 10% tin. The following analyses by P. Rivet, taken from his contribution in the *Journal de la Société des Américanistes de Paris* show to what extent tin was used by the Aztecs in their metal objects.

Objects from Mexico

Locality	*Object*	*Copper*	*Tin*
Valley of Mexico	Chisel	97.87%	2.13%
Atotonilco	Hatchet	98.05%	1.91%
Tlaxiaco	"	99.61%	0.17%
Tlacolula	"	Copper	No tin
Oaxaca	"	"	"
Mexican	Bell	"	"

Other metal objects of Mexican origin yielded thus:

Currency hatchets	25 samples	All copper	No tin
Knife hatchets	5 "	"	"
Flat hatchets	7 "	"	"
Chisels	8 "	"	"
Hatchets	13 "	3 samples with no tin	
Lance points	7 "	1 " " " "	
Bells	26 "	Copper " "	

Some 28 objects, when analyzed, showed the presence of tin was intentional. Punches, lance points and needles were bronze, while money hatchets, and thin hatchet blades contained no tin. Of 108 samples of metals analyzed, only 38 contained tin. Lance points and chisel hatchets had from 2.13% to 3.4% tin. Two specimens of hatchets contained 9.3% of tin. But it is a question, were they of pre-Columbian origin or made *after* the arrival of the Spaniards?

From the analyses of the Mexican metal objects it is evident that tin was not generally employed for obtaining a hard alloy, which required about 10%. The small amount of tin usually found would rather indicate an accidental impurity in the copper than an intentional ingredient in the alloy.

That the ancient Mexicans or Aztec people were familiar with the metallurgy of gold, silver and copper, the process of hammering, fusing and casting, there is no doubt, and that they understood soldering and even the plating of gold and silver on copper is suggested by the specimens in the museum collections.

The Bronze Age as determined by analyses of the specimens described, is still a matter of doubt for the Aztec, and must remain an open question until it can be decided by finding more specimens of recognized bronze composition, and of undoubted Mexican manufacture of pre-Columbian date.

II

The Maya were in the Stone Age in pre-Columbian times, although in the latter part of the Second Empire, they seem to have developed a knowledge of working the precious metals and copper; possibly this was due to the facility of obtaining copper and other metals from the neighboring provinces of Mexico with whom they traded. Copper objects said to be from Central America are not numerous in our museums, and although the old Spanish writers speak of "Bronze" it is doubtful if they knew the chemical composition of that metal and how it differed from Copper. Some metal specimens from Central America have been analysed. Small bells, needles and figurines from Chiriqui proved to be copper with no tin. Some bells contained 80% of Copper and 20% of gold. Of course none of these were Bronze. Some little bells from Bolivia and Argentina analysed Copper 99.35% and Tin 0.65%. The tin doubtless was an impurity in the Copper.

Another metal object said to be found in Central America is a T-shaped implement like those common in Mexico. A specimen said to be of Maya origin from the Peabody Museum, Cambridge, when analysed, proved to be simply *Copper*. A small copper bell from Yucatan upon analysis gave;

Copper	97.00%
Tin	.34%
Lead	1.00
Iron	.07%
	98.41%

A small bell from a cenote at Chichen Itza, Yucatan, yielded:[1]

Copper	98.44%
Iron	0.78%
Nickel	trace
	99.22%

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[1] Analyses made at University of Pennsylvania by Dr. D. L. Wallace.

The effigy of a Jaguar from a sacrificial deposit at Chichen Itza gave:[1]

Copper	60.00%
Gold	35.00%
Silver	3.00%
Iron	0.40%
	98.40%

Some metal objects from Tiahuanaco gave interesting results:[2]

Object	Copper	Tin	Iron
Knife	93.80%	6.17%	0
"	96.44%	2.93%	0
Chisel	96.99%	2.51%	0.30%
Hatchet	95.92%	3.27%	0
Pin	91.41%	7.70%	0.41%
Clamp	95.65%	0	1.63%

The following are from the Island of Titicaca:[2]

Object	Copper	Tin	
Hatchet	90.00%	10.02%	True Bronze
Chisel	Copper	None	
"	90.51%	8.92%	True Bronze
Knife	90.00%	9.12%	Bronze
"	97.60%	3.06%	
Drill	94.81%	7.56%	Bronze
Needle	96.00%	4.00%	

These analyses of tools from Tiahuanaco, and the Island of Titicaca are instructive, for they show that while the other nations (with the exception of the Inca) in South America, were undoubtedly in the Stone Age, the builders of Tiahuanaco it seemed had advanced into the Bronze Age and produced tools and implements of that metal.

With regard to the Maya civilization it certainly had reached a triumph of architecture and sculpture, but there is little to show it had reached the Bronze Age. It is doubtful if any specimens of metal work have been found from the First Empire, and such metal objects as have been claimed by the Second Empire may be the copper tools or implements made from the Copper of Oaxaca, Mexico, and possibly were fashioned by the ancient Aztec people.

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[2] Analyses taken from Journal de la Société des Américanistes de Paris.

The surprising part of the massive and highly decorated stone structures in Central America, is their elaborate and artistic ornamentation as well as the skill required in quarrying large blocks of stone and joining them together with the cabinet-maker's *accuracy*, and all this with *stone tools*.

BOOK REVIEWS

METHODS AND PRINCIPLES

Anthropology. A. L. KROEBER. New York. Harcourt, Brace and Company, 1923. x, and 523 pp. $4.50

This is the most complete and best balanced book on anthropology that I know of. It is so well written that it is almost literature, so good that it is almost great; and so sound that it will take a lot of juggling for our Huntingtons, Easts, Wiggams, Goulds, McDougalls, Stoddards, and the rest of the tribe of racemongers and eugenists to conjure any white rabbits out of it. Though just why the author felt he had to add a "Caucasian" to a Mongoloid-Negroid division of Man, and within the Caucasian limit the number of "races" to four, I do not know, nor does he give us any good reason. But it is a sane book and can safely be recommended to those who want to know what a real anthropologist has to say about anthropology.

Races, living and dead, and the race problem; language and the spread of the alphabet; the problems of heredity and climate, and of diffusion and parallels—with a chapter on the arch and the week for purposes of illustration; the beginnings of civilization; the growth of primitive religion; the history of civilization in North America, and the growth of civilization in the Old World. So runs, with slight modification, the tempting bill of fare. And it is all palatable, easily digestible, and full of calories. But will it support the growing body of the child, anthropology? As that question has personal value for every anthropologist, it is worth manipulating.

Anthropology, says Kroeber in his introductory chapter, is the "science of Man and his works." But that definition is too broad: too many well-established sciences claim Man and his works to leave any place in the sun for anthropology. How shall it shine then?

In the fact that the Louisiana Negro is black, has thick lips, is lazy, and sings "Suwanee River," Kroeber finds two forces at work, heredity and environment, nature and nurture. This furnishes us with a problem: which is nature, which nurture? The problem is not to be solved by history, for history is not concerned with nature; nor by biology, for biology is not concerned with nurture. Enter anthropology. Its specific task is to interpret phenomena into which both nature and nurture enter.

The untangling and determination and reconciling of these two sets of forces are anthropology's own . . . .the focus of its attention and an ultimate goal.

That Kroeber so promptly follows with the frank admission that anthropology has yet "not much of a solution to offer" is all to the good. Does "the fact that anthropology rests upon biological and underlies purely historical sciences" and the equally obvious fact that most anthropologists know next to nothing of biology and that history as written rests on nothing remotely related to any science, give us any clue to that failure? Or is there a deeper reason?

Does anthropology fail to offer "much of a solution" because it fails to recognize the fundamental biologic unity in the problem of the negro's skin color, shiftlessness, and Suwanee River? Or, to put it another way, is not its failure due to its attempt to isolate two forces which are in reality one? Little progress was made in the problem of organic evolution so long as attention was confined to a search for differences between organic and inorganic. Possibly we shall make little headway in solving the problems of human culture so long as we are bent on finding where nature leaves off and nurture begins.

A Kroeber writing a text-book on anthropology and a Kroeber being measured by a pair of callipers and a color chart to find out his racial affinities, are but two aspects of one problem. Both aspects are open to investigation and each is best investigated by a specialist. But both aspects are biologic problems and both deal with a living organism in a state of nature. We are no more justified in studying the book apart from the writer than in studying the writer apart from the book—together they make the man, the proper study of anthropology. Our environment of books is part of our *natural* environment. To draw the line between nature and nurture may be a convenience. Let us recognize it as such, but let us not forget that if we, as anthropologists, spend our lives in trying to untangle organic from social causes, we shall never get very close to the nature of Man or his works. "Social" causes *are* "organic" causes; and both are but manifestations of a relationship between nature and Man.

Herein, it seems to me, is a real field for the anthropologist. Not, where has nature left off and where has nurture begun; but, what is the nature of Man and his works and what are the underlying biologic impulses which have driven human intelligence into such different channels to satisfy organic hungers in this world of nature? To speak of "civilization," as did Huxley, as "an artificial world" built by Man within the cosmos, is to pull ourselves up by our bootstraps.

I should be hard pressed if I had to define "civilization," but whatever it is, it began to "grow" when protoplasm began to live. Nature evolving eyes and Man inventing eyeglasses are equally "natural." True, we can distinguish eyes from organisms and from bony sockets, and eyeglasses from the man who wears them or the man who makes them, but eyes, sockets, and eyeglasses are not to be understood apart from Man. To seek for causes of the negro's lips and shiftless disposition is to lose sight of the negro. To try to separate the negro from his environment is to deprive the negro of life and environment of a living organism.

Anthropology will be on its way toward a science when it begins to grasp the principle of the fundamental unity of biologic and social problems, and the common biologic background of Man and his works. It will prove itself a valuable science when it boldly tackles the problem of the nature of Man and his works as one problem and does not hesitate to attempt a re-synthesis of Man from such analyses as may be made by other sciences. There is room for an aggressive, enlightened science of Man.

In all this I am not aware that I have said anything with which the author of *Anthropology* would disagree. I have merely tried to give expression to a long-felt conviction that it is time anthropologists recast their program, reformulate their problems, and enlarge their vision. It is not enough to describe physical types and trace the growth and dissemination of culture. Anthropology can be satisfied with nothing less than a whole man.

To that science Kroeber's book is a welcome contribution; and, personally, I am grateful. Especially when I think of the advance it marks over my student days, when I spent eight weeks assorting a tray of potsherds, and a friend of mine, as graduate student in the University of Chicago, was being assigned the "next eight pages of de Quatrefages" for his next lesson.

GEORGE A. DORSEY.

Monotheism among Primitive Peoples. PAUL RADIN. London: George Allen and Unwin, Ltd., 1924. 69 pp. 1 s.

This paper, originally presented as one of the Arthur Davis Memorial Lectures, expresses an extremely interesting suggestion, to wit, that monotheistic conceptions are rooted not in a distinctive form of civilization but in a peculiar type of temperament. Since this type is everywhere likely to occur with a certain frequency, we must therefore expect to find monotheism—not necessarily, of course, as on obligatory faith—at every cultural level.

This anti-unilinear position is certainly in harmony with modern anthropological thought, and it is particularly gratifying to find Doctor Radin basing his argument on the phenomenon of individual variability. What I feel bound to question, however, is his definition of the type that evolves monotheistic ideals. According to the author, it is the eminently devout—as opposed to the intermittently religious—temperament that must be credited with monotheism. Since he himself, however, takes pains (p. 18) to characterize the craving for a co-ordination of experience and the ethical impulse as "essentially non-religious," it would seem that the philosophical rather than the religious temperament (as defined by the author) evolves monotheistic conceptions. It would be interesting to examine a fuller development of Doctor Radin's thesis, which might clarify this patent contradiction.

ROBERT H. LOWIE

Reallexikon der Vorgeschichte. Herausgegeben von MAX EBERT. Berlin: Walter de Gruyter and Co., 1924 and 1925.

At the time of writing three volumes of this remarkable work have reached the *American Anthropologist.* It is being issued in installments of approximately one hundred pages and at the subscription price of 6 mk. each. In the Preface Professor Ebert (Königsberg) outlines the scheme of his project. The primary object of the undertaking is to provide an authoritative survey of European prehistory, together with that of the Near Orient. While archaeological data and problems are stressed, philology, physical anthropology, and sociology are by no means slighted. The inclusion of certain topics naturally depended upon other than strictly logical considerations. Thus India has been reluctantly excluded from discussion because of the fragmentary state of our knowledge. China and Eastern Asia generally lay outside the scope of the enterprise, but Siberia is included; and while the archaeology of the New World, except for a general article, falls outside the limits set by the editor, the sociological essays take full cognizance of American data.

The list of collaborators is an impressive one, comprising Scandinavian, Finnish, Spanish, and Italian, as well as German and Austrian names. Among the best known in America may be mentioned the late Professor Montelius (Stockholm), Schuchhardt (Berlin), and Tallgren (Helsingfors). Physical anthropology has been allotted to Professor Reche (Vienna). American students will be pleased to find numerous articles on comparative sociology by Doctor Thurnwald (Berlin).

Both the typography and the copious illustrations are of a high order of excellence, and the articles examined by the reviewer seem to combine profound knowledge with sanity of judgment. In short, this encyclopædic work may be heartily recommended to all students of anthropology.

Robert H. Lowie

Primitive Religion. Robert H. Lowie. Boni and Liveright: New York, 1924. $3.50

Among the writers who have recently been meeting the urgent pedagogic need for text-books in anthropology R. H. Lowie has seemed to me the most adequate for the reader we ambiguously refer to as the advanced student, whether in or out of college. For Lowie not only expounds very lucidly, but he takes the reader with him into his workshop which is a place both orderly and stimulating, where there is plenty of well classified material, but where sources and authorities are rendered merely contributory to the subjects under discussion and never allowed to override or arrest thought, in other words where the student is informed but also expected to think.

Like *Culture and Ethnology* and *Primitive Society*, *Primitive Religion* is both informative and stirring. The book is formally divided into three parts: "synthetic sketches" of the religion of four groups, the Crow Indians of Montana, the Ekoi of West Africa, the Bukaua of New Guinea, and various Polynesian Islanders; a critique of the theories of animism, magic, and collectivism; "historical and psychological aspects" or discussion of various subjects such as individual variability, the relations between religion and art, between religion and sex, secondary association and other features of distribution. Part I not only supplies illustrative data for subsequent discussion, it offers keys of interpretation, as in its masterly analyses of how the apparently individualistic vision seeker is bound by his social patterns, as the writer puts it, the most extreme subjectivism merging in servility to folk-belief and usage; of how essential to understanding a cultural complex is the weighting of its traits; or of how in comparing cultures, the comparison not of single traits but of traits as a whole, weighted and organized, is indispensable. Catchwords fail. What greater lesson has the anthropologist to suggest? Consistently, as the writer sets forth criteria for a definition of religion and discusses religious theories he shows himself unhampered by formula and admirably critical, whether of Tylor's too sweeping animism, of the Lang or Schmidt high-God hypotheses, of the arbitrary distinctions between magic and religion, of Frazer and Durkheim, or of Durkheim's insistence upon the nexus between religion and the social group.

The writer's own approach to religious phenomena, he has said, is psychological, it is concerned with the state of mind of those observed, with their sense of mystery, of discrimination, emotional and intellectual, between natural and supernatural. There is little to object to in this definition of religion as an expression of the sense of the supernatural, more particularly as the writer has added that the definition leads not to any rigid exclusion "but merely to a somewhat different appraisal of features commonly treated under the head of religion." Certainly the definition is inclusive enough to be entirely workable, with one assumption, that all peoples have a sense of the supernatural. But have they? Of course Lowie points out that the supernatural is not always divested of materiality, but even with this allowance for the indistinguishable between natural and supernatural are we certain that all societies "recognize in some form or other awe-inspiring, extraordinary manifestations of reality?" Perhaps so, perhaps this sense is shared even with other species, but why so certain? Can it be that Lowie's conception of religion is influenced unconsciously by the religion of the people he is presumably best acquainted with, the subjective-minded Plains Indians? To be sure, Lowie is also acquainted at first hand with an extremely objective-minded tribe, the Hopi of Arizona; but they seem not to have suggested to him their conception of religion, which is preeminently a kind of instrumentalism, a highly systematic scheme of getting what you want or need. In a very interesting discussion of the process of rationalization in religion Lowie indicates that religion may serve the general economy, but I think he fails to allow sufficiently for the utilitarian aspect of religion which is paramount among the Pueblo Indians as well as among other ritualists.

Although the approach of *Primitive Religion* is psychological, the writer attempts little or no direct analysis. Of religious emotion, I mean, of course, as that emotion receives cultural expression. What desires, what fears provoke the sense of the supernatural? Surely there is more to be looked into here than "high-sounding aphorism." Moreover, neglect of such questions is costly in discussion of certain aspects of religion, for example in discussion of what Lowie has called Woman and religion, with a curious lapse into the misleading vernacular of confusing "woman" with "sex." Misleading to the writer himself, for most of his discussion is concerned with the theory of the exclusion of women because of men's discomfiture in regard to menstrual functions. The writer not only revamps this familiar theory of the English anthropologists, but like them supports the theory by argument from illustrations. Better had he given the space to a consideration of the religionist's feeling of antithesis between sex and religion. This feeling and a great variety of facts of ceremonial continence have to be ignored by one who dismisses the subject of the relationship between sex and religion as a special phenomenon, not touching the core of religion. I turn from this arid conclusion to ponder the words of the old *ne'wekwe* of Zuñi who was telling me of the habits of the Sun Crier of whom continence at certain times and seasons was expected. "And at other times," I asked, "can he sleep at other times with his wife?" "He can, but after a while he won't want to."

But there are other discussions in Part III where the writer is at his best, as in the section on regional characterization, where he points out the need of intensive distribution studies and illustrates with instances of diffusion how he would

> practise the historical method by tracing the distribution in time and space of traits with sharply defined individuality and . . . .establish sequences where the distribution is spatially continuous or rendered plausible by documentary evidence or at least by known ethnographic principles.

Among the problems of distribution none is more alluring or perplexing than why in group contacts some traits "take" and some do not "take." Lowie does not deal with this directly, but highly relevant to its general consideration are his discussions of the interplay between cultural circumstance and psychic trait, as, for example, in the history of the Ghost dance and of the peyote cult. Here as in other well-chosen instances Lowie succeeds admirably in suggesting the complexity of the social processes as well as the significance of individual variation. He has a rare understanding of the relations between the concrete and the philosophic.

ELSIE CLEWS PARSONS

ASIA

The Folk-Lore of Bombay. R. E. ENTHOVEN, C. I. E. New York, Oxford University Press, American Branch, 1924, pp. 353. ($4.70).

Any information about the manners and customs of India is welcome in view of the sad neglect of that country. As the author says,

> Writers on primitive belief and custom have made comparatively little use of the vast store of materials to be found in India, though few other portions have escaped their attention.

The fault lies partly in circumstances. The vast and important literature of India has absorbed most of the energies available, and that literature has required so much editing and commenting on that the scholars have had little time to engage in such a searching analysis of beliefs and customs and such an extensive comparison with connected cultures as is necessary for a theoretic insight into Indian religion. Another reason is that those who have made a special study of Indian customs have usually approached it from the point of view of the folk-lorist. Now the folk-lorist's point of view is that it is among the common people that the most primitive form of belief is to be found, that the common people, and not the leaders of thought, are the best witnesses on matters of religion, and so on. It is just as if we were to seek information on the German banking system from the working man who may or may not invest in the Savings Bank rather than from the men who direct German banks: the information so collected would be most thin and scrappy. It is even so with the folk-lorist's method: it is essentially scrappy. The title of the present book sufficiently announces that this is the author's point of view: it is really a scrap-book, as good as can be expected from the method, which is the method of questionnaire. Now the questionnaire is only a *pis-aller*: first of all it assumes that we know every variety of custom and that all that remains to do is to find out their distribution, secondly it produces nothing but fragments. Man does not think in fragments, he thinks systematically, he works from one idea to another; all the world over if a new situation arises he immediately goes to his precedents for advice; and thus he gradually advances from one idea to another, losing some and acquiring new ones. Further there is a vast amount of facts which the questionnaire method will never bring to light; they can only be arrived at by a study of concrete facts. The outcome of the questionnaire is a collection of facts which is tantalizing by its incompleteness, which is more valuable as raising questions than as answering them, which serves the inquirer rather as a guide does a traveller: it tells him where to go for the information he wants and see for himself. The defects of the method appear in the following case. We are told (p. 144) that the practice of giving the names of ancestors to children is common, and is due to the belief that the "spirits of the dead are reborn in children in the same family." Standing alone this fact might be described as "most interesting," be treated as a kind of curio, looked at and then put down again and forgotten; it is of no use to the theorist. It might become of use if we knew which ancestor it is: is it the grandfather? The custom of naming after the grandfather is widespread. On p. 147 we get more precise information: in the Kolāba district "the custom of giving a grandfather's name to the grandson prevails largely, and is due to the belief that the spirit of the dead are sometimes reborn in the same family." But still that is quite insufficient: we want to know the kinship system of these people, because we have a big question to answer: reincarnation in the grandson is an integral part of the original cross-cousin system or belongs to other cycles of belief as well.[1] We are given a quotation on p. 149, *Pitā putrena jāyate*. "The father is begotten by his son," but again we are disappointed of our hope of following up this clue because there is no reference to the Sanskrit treatise from which it comes. Such facts therefore must lie unused because they are given apart from the context which alone can make them of any use.

The only thing for the theorist to do is to go to Kolāba and find out in person, but in order to do this he requires funds and leisure, which are not always there. If he is lucky enough to get both he will be most grateful to Mr. Enthoven for putting him on the track, but in the meantime he can only pigeon-hole the information.

Many of the fragments which are thus useless when cast up by the questionaire are to be found stated in great detail and with all their context by the Sanskrit writers. For instance it is of little use to tell us that

> the seven Wise Men, i.e., Saptarishi, are said to have been created by the god Brahma from his own body: and teaching them the four Vedas, he handed them over to them and asked them to regulate the affairs of the world.

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[1] See *India and the Pacific*, Ceylon Journal of Science, Section G, Vol. I, Pt. 2.

when any Sanskrit dictionary gives us all the meaning of ṛshi and the exact constellation which they represent, a bit of information not given by the author, when Mac Donell's *Vedic Mythology* and Hopkins' *Epic Mythology* will give us the references to an extensive literature beside which the author's allusion is as a drop to the ocean. In the same way we have to be content with mentions of Mahāpurusha, Shiva, Vishnu, Brihaspati (Grihaspati on p. 97 must be a misprint), shraddha, etc., all of which subjects are dealt very fully in Sanskrit literature. There is no point in telling us that "in the Puranas there are instances of males being transformed into females, and females into males" when we have the Puranas to read if we chose; it would be more to the point if we had the references to those passages.

The fact is that our Indian folk-lorists set aside the religion of Sanskrit literature which they take to be the artificial creation of a priestly caste, and go to the common people in the hope of finding there natural, or as it is now called primitive, religion; but the priestly religion follows them everywhere; they try and ignore it, but it takes its revenge by witholding from them the key to their facts. I take a page at random, p. 189, which deals with the monkey-god, supposed to be aboriginal, non-Aryan; I there find mention of the "Dandaka forest (the name given to Maharashtra in the Mahabharata epic), Rama, Marut, Rishis, Brahmans, Brahmachari, Vajramaya, Mantra-shastra, Vira, Dasa, all Sanskrit words and names for the understanding of which we have to turn to Sanskrit literature, and if we do look up Sanskrit literature we shall scarcely require the scrappy information given on this page.

The truth is that the study of modern Indian beliefs is only of use as a complement to ancient Indian literature. There are many things in the latter which are obscurely or incompletely stated; these things may still be in full swing at the present day and then we have some chance of clearing up the obscurity. Again Brahmanic literature gives us only what was recognized in certain classes or in certain regions; modern examples may represent another line of tradition, and may give a wider base for the comparative method, just as modern Lithuanian supplements the information given by ancient Greek and Sanskrit. Thus when we hear of naturally perforated stones being holy at the present day we are reminded of the naturally perforated stones which play so important a part in Vedic ritual. We therefore direct our inquiries in the field so as to find a connection, and, if there is one, complete one source of information with the other. Most important of all however is the fact that literature only states what is not common knowledge, because if every one knows why tell them? Now the things that are common knowledge are precisely the most fundamental, and therefore the most fundamental things may be alluded to in the literature; they are not stated; we are left to infer them, sometimes in vain. Here the culture in being comes to our rescue: it presents us the social organization and the common assumptions which are taken for granted by the books; it enables us to explain ancient allusions otherwise unintelligible, and thus to prove that the ancient authors were acquainted with the customs which we have found existing in the flesh at the present day. It is however in this most important function of ethnology that the folklorists fail us: they go for the curiosities rather than the fundamentals.

It may seem ungracious to find fault with an author who is doing his best to help the student. I wish to make it clear that the blame rests not with him or those other government servants who have devoted their scanty leisure hours to the furtherance of science. The blame lies with those who are supposed to direct these studies from their central position in a place of learning. The amateur in the field looks to them for guidance; he can only believe that what they tell him to do is for the advancement of science; he may have doubts, but his modesty bids him repress them, and so he sets out on a dreary and unprofitable collection of facts. Is it too early to hope that the revolt against barren facts will soon triumph and that willing workers, like Mr. Enthoven, will soon be set the entrancing task of pursuing through ups and downs of success and failure a theory that after many evasions will at last be caught in their net?

Failing proper guidance, books such as the present must always be welcome, for they form, as I have said useful indices. Since however that is their chief function it is desirable that they should always have maps to save the reader having to refer to the Indian Gazetteer which is not a very portable work. A thorough index is also most important. The index in this case is somewhat thin and omits very important names.

A. M. HOCART

AFRICA

The Lango, A Nilotic Tribe of Uganda. J. H. DRIBERG (Uganda Civil Service). With a Foreword by SIR ROBERT THORNE CORYNDON, K. C. M.G. (Governor of the Uganda Province) London: T. Fisher Unwin, Ltd. 468 pp., ills.

This work is adequate in every respect except one; almost no data concerning the physical anthropology of the Lango are included. The author states that physical measurements of this tribe are unobtainable. This is unfortunate, because of the fact that the tribe seems to be unusually healthy and practically free from the ravages of syphilis, malaria, and sleeping sickness. Hence its members would be especially good subjects for anthropometric investigation. Also from the fact that the author does include an excellent summary of pathological conditions and some extremely valuable data on the number and sex and mortality of children born to individual mothers one is led to believe that Mr. Driberg would have made an important contribution to the physical anthropology of this tribe, had he been able to study it. He gives the impression of being a first-rate investigator.

The work begins with a historical treatment of the origin and migrations of the Lango, who are thought to have reached their present home in the Eastern Province of Uganda some two hundred years ago, having wandered in a southeasterly direction from the Shilluk area. Their language shows a close affinity with that of the Shilluk and they are thought to have been driven southward by Hamitic immigrants and by famine and shortness of water.

The account of their psychical characteristics indicates that the Lango are a very superior people. Although they are rather unstable emotionally they are uncommonly sensible and have a hearty distaste for all types of malignant witchcraft. They have high ideas of morality and live up to them; they are brave warriors and industrious agriculturists. They are extremely individualistic and independent.

The material culture of the Lango is carefully described. Perhaps the most interesting feature of it is the curious bachelor hut which is perched upon piles, is approached by a log staircase, and entered by a circular opening just wide enough for the body to squeeze through. No entirely satisfactory explanation of the origin of this structure is available.

The study of terms of relationship raises a number of points of interest to the student of social organization. The Lango culture possesses numerous features that have usually been considered relics of a matrilineal system. An examination of the relationship system shows, however, that actual patrilineal descent among the Nilotes must be very old, and the author is of the opinion that a strong matrilineal bias may have been introduced recently when the Nilotes were living on such amicable terms with their Hamitic neighbors that the former were able to marry Hamitic women. Such a bias would have re-inforced the remnant of matrilineal descent which had survived, even if the Hamitic women were derived from patrilineal Hamitic tribes.

The Lango are not only unusually reticent in matters of religion and magic, but are also extremely vague and uncertain on the essential points of their religion. For this reason the author feels that his account of their religion and magic is "somewhat spasmodic." Apparently their religion is

> compounded of two separate elements, which are now treated as distinct, now as indissoluable, namely ancestrolatry on the one hand, and on the other hand monotheism, which has by now largely broken down, but was formerly observed in the person of the high god *jok*.

The second half of the book is devoted to a grammar, vocabularies and texts of folk-tales.

Mr. Driberg offers his book, which represents a labor carried on intermittently during six years of residence among the Lango, as "the contribution of an amateur." The reviewer is of the opinion that this work would be a credit to any professional anthropologist. Perhaps the best that one can hope for African anthropology is that the French and British military and civil services in that continent be filled with men of the caliber and aims of the author of the present work.

E. A. HOOTON

SOME NEW PUBLICATIONS

Bolinder, Gustav. Die Indianer der tropischen Schneegebirge; Forschungen im nördlichsten Südamerika. Stuttgart: Strecker und Schroeder, 1925. xi-274 pp., 98 illus., 1 map.

Bouvan, M. J. La Couvade. (Revue Anthropologique, Jan.-Mar. 1925, nos. 1, 2, 3, pp. 48-70).

Brandstetter, Reuward. Wir Menschen der indonesischen Erde; IV, Die indonesischen Termini der Schönen Künste der künstlerisch verklärten Lebensführung, mit einem Anhang von indogermanischen Parallelen. Luzern: E. Haag, 1925.

Bösch, Fridolin. Le Culte des Ancêtres chez les Banyangwezi. (Anthropos, v. 20, nos. 1, 2, Jan.-Apr. 1925, pp. 200-209).

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Brun, A. De l'Ethnique et de la Mystique des Nosairiah de Syrie. (La Géographie, v. 43, no. 2, Feb. 1925, pp. 153-186, 1 map).

Bryan, W. R. Italic Hut Urns and Hut Urn Cemeteries: a Study in the Early Iron Age of Latium and Etruria. (Papers and Monographs of the American Academy at Rome, v. 4, 204 pp. 1925) 50 *lire*.

Casanova, Gonzólez. Nota sobre la Lengua Chinanteca, con Bibliografia y Vocabulario. (Anales del Museo Nacional de Arqueologia, Historia, y Etnografia, v. 3, no. 1, Jan.-Mar. 1925, pp. 103-108).

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DISCUSSION AND CORRESPONDENCE

About Cremation

The first number of this year's *American Anthropologist* contained an able paper by W. C. Macleod on the "Mortuary Aspects of Northwest Culture," which could not but immensely interest me because of its frequent references to my former charge, the Western Déné. In a note on the first and second pages of his effort, the author, mentioning my contention that cremation had been borrowed by the Carrier from the Tsimshian of the Skeena, puts on record his belief that my statement "is merely a deduction without a knowledge of the 'attendant practices' among the Tsimshian." I confess that I cannot see the ultimate end of this remark. I knew those practices from the writings of Dr. Boas and others, through visits to the Coast, and especially through the Tsimshian of the Skeena themselves, who lived within the territory assigned to my missionary activities. But *transeat*.

What I want to comment on is the author's assertion, after he has mentioned my reference to the "non-cremating Sikanni," that "in Harmon's time Sikanni practice was the same as that of the Carriers" (*op. cit.*, p. 123). This, to my most certain knowledge, is so far from the truth that, though I am here away from my library and even copies of my own past writings, I felt at first like contradicting it point-blank and without any authority to support my word.

For this much is beyond the shadow of a doubt: the inland aborigines of northern British Columbia in contact with the Tsimshian borrowed from them cremation, the consequent potlatch and labret-wearing. The nearest neighbours of the latter, the Babine, adopted all of these three customs; the Carriers, farther inland and their immediate neighbours, borrowed from the same only cremation and the potlatch. As to the Sékanai, whose habitat is still farther away, namely east of that of the Carriers and whose social organization is quite different, they adopted neither cremation nor labret-wearing, but had made a faint, local and not over successful attempt at potlatching when they had to yield to the influence of the white newcomers.

Of this I am so sure that, I repeat it, my first impulse was to deny totally Macleod's assertion that, in Harmon's time, the latter burned their dead just like the Carriers—and that in spite of his references to that trader's journal. In the first place, it is a well-known fact that that worthy's little book had been considerably "edited" by a Protestant minister of New England before it was deemed worthy to be presented to the "christian publick." And then I personally know of statements by other such traders which are entirely worthless, even when found in regular books.

Yet I thought it more proper to get Harmon's work, so that I might be able to control Macleod's references. The first is p. 161. Thumbing the trader's Journal, I find, what? That the Sékanai practised cremation just like their neighbours the Carriers? Not by any means. "The Sicannies," says Harmon, "bury, while the Tâcullies (the Carriers) burn their dead." I cannot understand such a disastrous distraction on the part of a scientific writer.

His second reference is p. 163. There I find indeed that "this day the Natives have burned the corpse of one of their chiefs." But was that among the Sékanai? Not at all; it was among the Carriers of Fraser Lake (*cf.* p. 162).

Macleod's last reference, for a wonder, would at first seem to bear him out in his contention. "A Sicanny died at this place," says Harmon, "and the following circumstances attended his incineration." But again where did that occur? At Stuart Lake, the capital of the Carriers. As happened more than once, two Carrier women had married a Sékanais for the sake of his extensive hunting-grounds, and, on his demise, they and their fellow-tribesmen followed their own mourning rites and cremated his remains as if he had been one of them.

This is so true that Harmon afterwards shows the two widows "carrying" daily a little satchel containing some of the bones of their late husband, a custom which I am sure even Macleod, if he knows anything of prehistoric Déné sociology, will not put to the credit of the Sékanai, and points to the ultimate potlatch which would have been a sheer impossibility to the Sékanai, for the good reason that, being nomadic, they had not a single house, let alone feasting-lodge, to assemble in.

The point, therefore, is now settled, and we cannot escape the conclusion that, even in Harmon's time, while the Carriers cremated their dead, the Sékanai did not.

A. G. MORICE, O.M.I.

FIVE AS A MYSTIC NUMBER

Four figures so prominently as the only or chief mystic number in North America that other sacred numbers are usually mentioned as deserving of special notice. So far as I know, five as a sacred number is restricted to the Far West, and to a rather limited region there. Professor Kroeber notes its occurrence in northwestern California, southwestern Oregon, the lower Columbia area, and Puget Sound.[1] Mrs. Erna Gunther Spier is able to confirm this statement for the last mentioned area on the basis of recent field work; and I have called attention to the prominence of five among the Paviotso.[2]

When reading Professor Karsten's account of the Toba I was struck with the ritual and mythological significance of five,[3] and I have since encountered several additional references of interest. The Chiriguano of the Gran Chaco impose upon the father of a new-born child a five days' fast and rest.[4] From the Witoto of Colombia the evidence is not decisive, but I note that the universe is conceived by these Indians as a series of five strata and that five years must elapse before the same man may again act in the capacity of master of ceremonies at the Juka festival.[5]

The gap between central California and Colombia is in a measure bridged by the predominance of five as the mystic number of the Tepecano of Jalisco, Mexico.[6] It would be of considerable interest to discover whether a continuous distribution could be established for this trait in South America and ultimately for the whole of the New World.

ROBERT H. LOWIE

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[1] A. L. Kroeber, California Culture Provinces, Univ. of Cal. Pub. in Amer. Arch. and Ethnol., vol. 17, no. 2, 1920, p. 161.

[2] R. H. Lowie, The Cultural Connections of California and Plateau Shoshonean Tribes, same series, vol. 20, 1923, p. 154.

[3] R. Karsten, The Toba Indians of the Bolivian Gran Chaco, Aabo, 1923, pp. 22, 27, 109 f.

[4] E. Nordenskiöld, Indianerleben, Leipzig, 1912, p. 206.

[5] K. Th. Preuss, Religion u. Mythologie der Uitoto, I, Göttingen, 1921, pp. 49, 124.

[6] J. A. Mason *in* E. C. Parsons, American Indian Life, 1922, pp. 203-236.

TOTEM POLES

To aid me in my compilation of information about totem poles, I would be glad to receive from those institutions and individuals who have not already sent me the material, a full list of totem poles and house posts (not models) in their charge.

I desire the catalogue number of each specimen, the name and address of the person or museum owning it, its height, the location from which it came (including its position in the village and relation to other poles) and reference to catalogue numbers of photographs and motion pictures of it, as well as to illustrations of and literature about it.

A catalogue of photographs of these objects is also desired. While complete information is sought, any clue to obscure poles will be welcome, even to poles in situ.

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National Museum of Canada,
Ottawa.

A CORRECTION

I should like to call attention to several errors in citations accompanying the article of Mr. Waldemar Bogoras, "Ideas of Space and Time in the Conception of Primitive Religion" which appeared in the American Anthropologist, n.s. v. 27, no. 2, April-June, 1925. pp. 205-283.

Quotations appearing in footnotes 9, 10, 14, 35, and 37 which are credited to me are taken from Mr. M. R. Harrington's "Religion and Ceremonies of the Lenape," Indian Notes and Monographs, Museum of the American Indian, Heye Foundation, no. 19, 1921.

No doubt the error is a purely clerical one because Dr. Bogoras seems to have studied Mr. Harrington's pages with interest and profit.

ALANSON SKINNER

PROCEEDINGS OF THE LINGUISTIC SOCIETY OF AMERICA AT THE ORGANIZATION MEETING IN NEW YORK, DECEMBER 28, 1924

On the morning of December 28th, 1924, a meeting for the purpose of organizing a linguistic society was held in the American Museum of Natural History, 77th Street and Central Park West, New York City, in accordance with the call issued by Professor Leonard Bloomfield, Professor G. M. Bolling, and Professor E. H. Sturtevant, with the approval and over the signatures of twenty-six other scholars in linguistics.

The registration desk was presided over by Mr. J. R. Ware and Mr. F. B. Krauss, and record was secured of the attendance of sixty-nine present.

The meeting selected the name Linguistic Society of America, and adopted a constitution for the new Society. The following officers were elected for 1925:

President, Professor Herman Collitz, Johns Hopkins University.
Vice-President, Professor Carl D. Buck, University of Chicago.
Secretary, Professor Roland G. Kent, University of Pensylvania.
Treasurer, Professor Roland G. Kent, University of Pennsylvania.
Executive Committee, the preceding and
Professor Franz Boas, Columbia University.
Professor Oliver Farrar Emerson, Western Reserve University.
Professor Edgar Howard Sturtevant, Yale University.
Committee on Publication:
Professor George Melville Bolling, Ohio State University.
Professor Aurelio M. Espinosa, Stanford University.
Dr. Edward Sapir, Victoria Museum, Ottawa.

The Linguistic Society of America was founded for the advancement of the scientific study of language. The Society plans to promote this aim by bringing students of language together in its meetings, and by publishing the fruits of research. It has established a quarterly journal, *Language*, of which two numbers have already been issued, and will soon start a series of monographs; the latter will appear at irregular intervals, according to the material offered to the Committee on Publications and the funds available for the purpose.

Members will receive both in return for the annual dues of Five Dollars.

Membership in the Society, which now includes two hundred and eighty-five persons, is not restricted to professed scholars in linguistics. All persons, whether men or women, who are in sympathy with the objects of the Society, are invited to give it their assistance in furthering its work. Application for membership should be made to the Secretary, Professor Roland G. Kent, University of Pennsylvania, Philadelphia, Pa.

F. G. SPECK

NOTES ON STATE ARCHAEOLOGICAL SURVEYS DURING 1924

It has been the custom for the Committee on State Archaeological Surveys of the Division of Anthropology and Psychology of the National Research Council to record in the "American Anthropologist" the work accomplished each year by the states. Herewith are presented summaries of the archaeological activities for 1924 of such states as have reported to the Committee. There are also appended brief résumés of the archaeological and ethnological investigations of certain museums and other scientific institutions of the United States and Canada. The list is far from complete, but it is hoped that in future years a fuller record may be gathered and that the annual report of the Committee may develop into a yearly recapitulation of all field work in the Americas.

Alabama. Since last reported, activities of an archaeological character in Alabama have been confined to the work of the U. S. Bureau of American Ethnology and the Alabama Anthropological Society.

The Bureau of American Ethnology has conducted work in the Muscle Shoals Project above Wilson Dam at the mouth of Town Creek, and at one or two places in the vicinity. The immediate supervision of this activity was under Mr. Gerard Fowke, who spent some two or three months here, and at a point ten miles west of Moulton in Lawrence County. Reports of this activity will be made through bulletins of the Bureau. The results of his work in the nature of relics were on display at Courtland for some weeks and Mr. Fowke was very generous in giving an opportunity to visitors to observe the manner of conducting such work. A large mound on Town Creek about 80% of which was periwinkle shells was trenched through.

Numbers of flaking tools and bone and shell picks for removing the food from the boiled crustations were found. In another mound further down the river some copper objects were found.

A large mound in Moulton County some miles south of the Tennessee River yielded quite a few objects, but none of Mr. Fowke's finds indicated a culture unknown to local investigators.

The Alabama Anthropological Society during 1924 proved the custom of urn-burial to have been practiced at a locality twenty-five miles north of its former discoveries. Urns containing burials of adults, adolescents and infants were taken out at the old Alabama town of Taskigi at old Fort Toulouse at the junction of the Coosa and Tallapoosa Rivers. These burials were in direct contact with, as well as on a level with, both flexed and lengthwise placements. The lengthwise burials showed ear plugs and bear tooth ornaments, and the flexed burials indicated mortuary tributes in vessels, the latter two customs suggestive of Creek influence. Prior to 1924, no evidences of the Choctaw form of urn-burial had been located north of Pintlala Creek, some fifteen miles south of Montgomery.

Finds on Sipsey and Buttahatchee Rivers in Walker County have been numerous in recent months. These are largely the results of agricultural operations. Urns have been taken out on Catoma Creek in Montgomery County, and shell objects of a culture similar to that at Moundville have been located on Line Creek, seventeen miles east of Montgomery. At this latter place, however, extensive exploration has failed to indicate evidence of urn-burials.

The Anthropological Society has placed markers during the year at three places connected with the aboriginal history of the State and these localities have some archaeological connection. The plans formulated some two years since looking toward the acquirement of all mound sites by the State to make of these sites small parks, have gone forward and it is believed that in no distant future this will be consummated. *Peter A. Brannon, President Alabama Anthropological Society.*

California. The University of California survey of archaeological sites in the southern San Joaquin Valley was concluded in 1924, and important collections were studied, preparatory to publishing a report on the archaeology of the region. The famous Emeryville shellmound, near Oakland was razed by steam shovel in December. Through the generosity of the owner the University of California kept two archaeologists on the ground to collect specimens as they were exposed by the shovel. *E. W. Gifford.*

Colorado. The work of 1924 was a continuation of that of 1923, which was in the charge of F. H. H. Roberts, Jr., under the supervision of J. A. Jeançon. The object of the two seasons' work was the acquiring of material for an archaeological map of Colorado, as far as was possible. In 1923 there was surveyed the area from Pagosa Springs in south-central Colorado to the Utah border—east and west; and from the New Mexico border to about forty miles north of it.

In 1924 the writer took full charge of the expedition. We covered a part of the previous year's work for corroborative data and also spent 3 weeks in intensive research in the pit-house at the foot of the Chimney Rock mesa—Pagosa-Piedra region. Some exceedingly fine, new material was found in our pit-house research and also much which was so confusing that it will need a great deal of study to sort out definite and indefinite things.

Early in July we took up the mapping from where Roberts left off in 1923 and continued it to within about forty miles of Grand Junction. Later we investigated certain types of ruins in Moffat County in the northwestern corner of Colorado.

In our work of both 1923 and 1924 we attempted to cover extensions of Colorado culture areas into New Mexico and southeastern Utah and for that reason made extensive expeditions into both of those states.

In connection with the mapping we investigated a large number of hieroglyphs of historic as well as pre-historic origin and secured a mass of valuable data on the subject.

Possibly a brief review of the results of our work may be of interest. We have positive evidence that, what I call for want of a better name just now, the pit-house culture area, begins—on the east—a few miles below Pagosa Springs; extends in a southeasterly direction into New Mexico, along the western side of the Chama River as far as the bend of that river near the Cañon de Chama, thence a little south of west to the Chaco region, again south to Las Lunas region, probably down the Rio Grande, on the west side, for an indeterminate distance, returning somewhere west of Zuñi, through New Mexico to Colorado and over the border north about sixty miles. From here the line runs, sharply, back to the starting point. This is only a general outline. Included in this area are many ruins of other types as well, but pithouses have been found everywhere in it, by Judd, Hough, ourselves and others. *J. A. Jeançon.*

Indiana. During the past year the Division of Geology of the State Dept. of Conservation has located archaic deposits in Jackson, Lawrence, Washington, and Harrison Counties, Indiana. Collections of relics and artifacts have been made from these localities.

In cooperation with the State Historical Commission a report on the Archaeology of Lawrence County was published. By the same cooperation a similar publication was issued for Washington County.

The Indiana Academy of Science, the Society of Indiana Pioneers, State History Conference and State Historical Commission are cooperating in this work. *W. N. Logan.*

Iowa. About half the season's work on the preliminary archaeological survey of Iowa as conducted by The State Historical Society of Iowa (Iowa City, Iowa, Dr. Benj. F. Shambaugh, Superintendent) was devoted, as were the entire seasons of 1922 and 1923, to work on a bibliography and summary of the extant literature. This phase of the work made good progress and appeared to reach a point measurably near to completion. As the contemplated preliminary survey also includes the collection of unpublished information from all who may happen to possess the same, some fifteen hundred letters of inquiry were sent out and considerable subsequent correspondence was developed. About one hundred replies furnished a body of good new data and supplied promising leads for the rapid field work which followed. About seven weeks were spent in travelling from county to county in southern Iowa, about a third of the State's ninety-nine counties being visited. The results attained were generally quite satisfactory, the rapid nature of this field survey considered. Many collections of material were studied, their owners interviewed, and, wherever possible, known sites were visited and given a superficial examination. Incidentally several new sites were discovered. On the average, this personal contact with the field, slight as it was, about doubled the available information from the counties visited. The work for 1925 is planned on the same lines that were followed in 1924. *Charles R. Keyes.*

Michigan. Since Harlan I. Smith left this state more than thirty years ago there have been no intelligent or organized efforts made to study the antiquities of Michigan, until two or three years ago. At that time the writer was invited to organize a department in the Museum of the University of Michigan, that might have some systematized and rationally directed plan. It seemed that the first thing to do would be to make an invoice, so to speak, of the archaeological remains of the state. A considerable part of this could be done in office by going through the fragmentary reports that have been published from time to time, but of course the major part of the task would consist in travelling about the state assembling information that has not been made public and locating such stations as still remain in evidence or may have, if destroyed, authenticated evidences of once having existed.

Last summer a trip was taken through the central and western part of the Lower Peninsula by automobile. This itinerary consumed about five weeks time. As a result, Mr. Frank Vreeland, who acted as assistant last year, compiled a very excellent report of sixty pages. He was able to locate, I being with him for half the time, several hundred sites,—mounds, inclosures, villages, cemetaries, embankments, etc. Since then, and since Mr. Greenman has returned from Oxford, several other short trips have been taken, each one more or less productive and adding new information.

A map of the state has been prepared which indicates all itineraries. We undertake to check up on country maps locations as we are able to verify them. The result is we have some quite complete maps of a few counties and several others in process of filling in as we assemble more information.

For the coming season, Mr. Greenman will undertake some intensive work by making detailed excavations, probably commencing in Missaukee County where there are still standing some very interesting inclosures, embankments, etc.

A book, the title of which will be "Primitive Man in Michigan," has been written. It will be of about 250 pages and will contain 40 pages of illustrations. It will be published as a University report and, in case it possesses no other merit, it will show at least a disposition, that has within the past two or three years taken concrete form, of the University to do some serious and forelooking work on the subject of local archaeology. *W. B. Hinsdale.*

Ohio. During the past year the entire season was spent upon the great Hopewell Group located in Ross Co. Many fine objects have been brought to light such as large pendants made of amber, a double burial with copper nose pieces, a burial with a "butterfly" head-dress trimmed with pearls and cut mica. One large necklace of pearls, containing 320 pearls in a fine state of preservation; chisels and drills of meteoric iron; one burial containing 100 copper ear-ornaments in pairs, placed in a row around the body; a cache of 40 celts, the largest one 18 in., the smallest one 2 inches long, a cache of pipes (20) one of which was the effigy of the wild goose with head and neck forming the stem on each side, the necks wrapped around the bowl, many interesting patterns cut from mica, such as the human form, hands, eagle foot, spear, etc.; a human head fashioned out of copper, and many hundreds of ornamental objects, etc., comprise other finds.

Our work, beginning in June, will be to finish the Hopewell Group, and then begin the examination of the large mound in the Seip Group. This mound is 250 ft. long, 150 ft. wide, and 30 ft. high. This is a very large undertaking and will take several years to complete the work. *W. C. Mills.*

Oregon. Through the financial aid of Mr. Henry J. Biddle, the University of California made a survey of mound sites near Albany; and conducted excavations near Big Eddy and on Sauvies Island on the Columbia River. *E. W. Gifford.*

Tennessee. The State Archaeological Society was organized on Nov. 17th, 1924, with about sixty members. The Society is actively making preparations to protect our antiquities by proper legislation, and also engaged in procuring data for the making of a map showing the Archaeological sites in the State. Many data have already been procured. It is also contemplated that during the spring and summer months, considerable exploration work will be done. The result of our meeting for the purpose of organizing the Society, has created a great deal of interest over the State and in the discharge of my duties connected therewith, I have made a preliminary survey of the caverns, mounds and evidences of habitations along Wolf and Obed rivers in Pickett County. Pictographs of men, animals and unknown objects were recorded; rock-cut fireplaces were observed; cave deposits showing evidence of cremation were partially examined; and a representative collection of artifacts was secured. *P. E. Cox.*

Washington. The University of California, through the generous financial aid of Mr. Henry J. Biddle, conducted excavations at Spedis, Washington, in the vicinity of the Dalles. *E. W. Gifford.*

Wisconsin. The Wisconsin Archaeological Society has held eight regular monthly meetings at Milwaukee during the year. On April 11 and 12 it held its ninth annual joint meeting with the Wisconsin Academy of Science at Madison.

Four issues of the Wisconsin Archaeologist have been published. These bear the titles "Stone Pestles and Mortars," "Vilas and Oneida

Counties," "Wisconsin Gravel Pit Burials" and "Chippewa Menomini and Potawatomi." Another publication "The Fifth Addition to a Record of Wisconsin Antiquities," is in press. This is a report on all of the fieldwork accomplished by the state society in the years 1912 to 1924. During the past year fieldwork was conducted by the society especially in the Lake Kegonsa region in Dane County (by Dr. W. G. McLachlan); in the Grand River region in Green Lake county (Town L. Miller); in Barren County (J. A. H. Johnson); in the Mud Lake region in Dodge County (S. W. Faville and C. E. Brown); in Winnebago County (George Overton); in the Watertown region in Jefferson County (A. Sohrweide, Jr.); and in Columbia, Walworth, Dane and Washington counties (C. E. Brown). All of these surveys and explorations were very successful.

During the year metal tablets were provided for three groups of Indian mounds preserved in three different public parks in Madison. Three other fine groups located on the shores of Delevan Lake, in Walworth County were premanently preserved and will be marked this year.

During the summer and autumn months several thousand tourists visited Aztalan Mound Park at Lake Mills and a large number visited Man Mound Park at Baraboo. These two state mound parks are owned and operated for the public by the Wisconsin society.

The archaeological collections at the State Historical Museum, Madison, the Milwaukee Public Museum, the Logan Museum at Beloit, and the Oshkosh Public Museum at Oshkosh were all greatly increased.

Field and mound preservation work will be continued in the present year in many parts of the state. *Charles E. Brown.*

A. V. Kidder

ANTHROPOLOGICAL WORK OF MUSEUMS AND OTHER INSTITUTIONS DURING 1924

American Museum of Natural History, New York City

The Department of Anthropology of the American Museum of Natural History sent out four field parties in 1924, as follows: the Fourth Bernheimer Expedition to northern Arizona; the Second Cañon del Muerto Expedition; an expedition to the Navajo Indians; an expedition to make a survey of Indian racial types in the Southwest and on the Pacific Coast.

Mr. Charles L. Bernheimer, as heretofore, organized, financed and led an exploring party to the country surrounding Rainbow Bridge, Navajo Mountain and Cummings Mesa. Navajo Canyon was explored to its mouth and the top of Cummings Mesa was examined in detail. The many side canyons opening into Navajo Canyon were examined; one of these contained more than forty caves, a discovery of some archaeological promise. Incidentally, Mr. Bernheimer discovered dinosaur tracks in Neskla-nizadi Canyon.

Mr. Earl H. Morris returned in the late fall to continue his explorations and excavations at Cañon del Muerto. This second visit was made in cooperation with the University of Colorado. The sites examined here have yielded very important results from a stratigraphic and chronological point of view.

Dr. Louis R. Sullivan, in connection with his studies of race crossing, visited the more important Indian schools in the Southwest and on the Pacific Coast, to obtain data on facial and tooth characters. Some 6,000 individuals were examined and special attention was given to eye, nose, and tooth forms.

Dr. P. E. Goddard continued his systematic ethnological study of the Navajo Indians, paying special attention to social organization and the linguistic problem.—*Clark Wissler, Curator-in-chief, Division of Anthropology.*

Museum of the American Indian, Heye Foundation

Arkansas. Two weeks in January 1924 were spent in investigating a great find of ancient Indian pottery in some aboriginal cemeteries at Carden Bottoms, fifty miles or so above Little Rock, Arkansas, on the Arkansas River. Here a collection of choice pieces was purchased, illustrating both painted and engraved ware, in addition to the usual pottery with incised decoration, also a number of the ornaments and implements used by the ancient people.

Idaho, Montana, and Alberta. Mr. William Wildschut commenced in May to collect ethnological specimens among the Shoshone and Bannock on the Fort Hall reservation in Idaho, but by reason of the custom of these Indians of burying all the personal belongings of the dead, old objects, excepting basketry, have become rare; consequently of about three hundred artifacts gathered from these tribes only about half are other than baskets. Later Mr. Wildschut proceeded to the Crow and Cheyenne reservations in Montana, thence to the Blackfeet in the same state, and to the Bloods and Piegan in Alberta, among all of whom objects of importance and rarity were collected.

Arizona and Mexico. Mr. E. H. Davis collected many specimens of beadwork for this institution among the Yuma Indians of Arizona. He also went among the Yaqui of Sonora, Mexico, and the Seri of Tiburon Island in the Gulf of California.

Canada, Labrador and Greenland. Dr. F. G. Speck of the University of Pennsylvania made a trip to Canada where he obtained from the Montagnais Indians of Quebec a collection of specimens comprised mostly of articles used for hunting and fishing. He also brought back some archeological specimens from this region. Dr. Speck then went to Labrador and Greenland where he obtained some interesting material from the Eskimo, Nascapee, Mistassini and Montagnais tribes.

Canada. Mr. A. I. Hallowell of Philadelphia visited the St. Francis Abnaki Indians of Quebec, Canada, from whom a representative collection was obtained, among which are articles of fur, apparel, foods and a canoe.

Nevada. Among the most important of the recent investigations is that, started in 1924, and which was brought to completion by M. R. Harrington in certain dry caves near Lovelock, Nevada, which revealed many interesting prehistoric objects from a deposit found to be fourteen feet in depth, built up in layers by successive generation of occupancy. The articles recovered indicate that the Indians had been attracted to the spot by reason of the proximity of Humboldt Lake. Their chief subsistence was gained from wild plants, rabbits and other small mammals, fish, and ducks, and agriculture was practised on a small scale. Baskets, textiles, feather head-dresses, implements of wood, stone, and bone, well-made cordage, fish-hooks, fish-nets, entire desiccated fish, rabbit snares, and decoy ducks, are among the objects recovered from the cave deposit. The dead were wrapped with deerskin, with blankets woven of muskrat-skins, and with fish-nets, and were covered with bowl-shape baskets made of coiled willows and elaborately decorated. An adult mummy and the mummy of a child were recovered.

Of at least equal importance was a subsequent research that led to the discovery and the beginning of excavation of groups of pre-Pueblo ruins in Clark County, southeastern Nevada, which are scattered over an area several miles long. Many of the ruins lie in the valley, more or less buried in sand-dunes, but others are on the eroded ridges between the lowlands and Mormon mesa. The walls of the houses, averaging seven inches thick, are built mainly of adobe "loaves" laid up with adobe mortar and sometimes interspersed with slabs of stone, and the whole plastered with adobe. The floors are usually of adobe, but sometimes are paved with flat sandstone fragments, and, in some houses, slabs are set on edge against the base of the walls. Little of the walls are erect, but with the charred remains of roofs sufficient has been revealed to show that the structures were rectangular, evidently of a single story, and with roofs made of poles covered with grass or tules and mud. The dwellings consisted of from one room to four or five small rooms. Burials were made in the floors of some of the rooms after they were abandoned. Accompanying the dead are earthenware vessels and minor appurtenances. The pottery consists of plain dark ware, corrugated cooking-pots in several different styles, black-on-white and black-on-yellow painted ware, mostly bowls, and black-on-red bowls and vases. The painted receptacles are ornamented with well-executed geometric patterns. Evidences of small circular kivas have been found, but aside from the usual central fireplace they do not contain the structural features characteristic of the ceremonial chambers in the Pueblo region proper in Arizona, New Mexico and Colorado. The discovery of these remains is important in that it extends the ancient Pueblo region far to the westward, across the Colorado River, and there are indications of its extension even farther. The work is still in progress here, as well as in certain caves in the vicinity, notably Salt caves, where distinct indications of prehistoric salt-mining have been found.

Nebraska and North Dakota. Dr. Melvin R. Gilmore of the Museum staff, left New York early in June and proceeded to Nebraska. He reached the Omaha Reservation in northeastern Nebraska, where he obtained a Sacred Bundle; and a number of ethnological objects from the Winnebago tribe.

In July Dr. Gilmore went to North Dakota among the Arikara to accomplish the main purpose of the year's work, which was the making of records of some ancient ritualistic ceremonies of that tribe. At the Fort Berthold Reservation, where the Arikara reside, one hundred and forty miles up the Missouri River from Bismarck, Dr. Gilmore had a council with the leading men and made arrangements for the ceremonies to be held. By this time Mr. Coffin, the Museum photographer, had arrived at camp, and the company was further enlarged by Dr. H. B. Alexander, of the University of Nebraska, and party, voluntary aids in recording the ceremonies, which began on July 24th and continued several days. The photographing of the ceremonies, which included the Sage ceremony, the Holy Cedar Tree ceremony, and the Mother Corn ceremony, was completed by the end of July, when Mr. Coffin returned to New York. Later Dr. Gilmore obtained a collection of ethnological objects from the Arikara, and put in considerable necessary time on obtaining notes on ceremonies and other ethnological matters.

Returning to Nebraska, Dr. Gilmore obtained another shipment of Winnebago objects for the Museum. He then went on to the Santee Reservation in northern Nebraska, on the Missouri River east of the mouth of the Niobrara River; and after establishing acquaintance and confidence with the people there, succeeded in obtaining some information and many interesting museum objects from that tribe.

He then moved on to the Pawnee in Oklahoma, where he obtained some interesting objects and notes.

Panama, Chile, Boliva and Peru. Journeys by Mr. A. Hyatt Verrill among the tribes of Panama, notably the Teguala, Boorabi, Terribi or Shayshan and Coclé tribes, resulted in obtaining comprehensive collections illustrating the culture of those Indians. Proceeding thence to Chile, Mr. Verrill made collections among the Araucanian Indians, later returning by the way of Boliva and Peru, in which countries he gathered materials among the Pano and Changa tribes respectively. Again in Panama, Mr. Verrill, after a most difficult journey through a region practically unknown to whites, succeeded in gathering a large number of objects from the Sabanero-Guaymi group of Indians, who had not hitherto been represented in the Museum collections.

Nicaragua. A collecting trip was made by Mr. David E. Harrower to eastern Nicaragua, the result of which is a collection of about five hundred objects from the Rama, Mosquito, and Samu tribes.

Patagonia. Dr. Samuel K. Lothrop went to Patagonia for the purpose of collecting ethnological objects to illustrate the tribes of that region.

Minor archaeological excavations were conducted by Prof. Marshall H. Saville in graves on the coast of Peru, incident to his attendance as a delegate at the Pan American Scientific Congress at Lima; by Mr. Donald A. Cadzow at a prehistoric Algonkian burial site on Frontenac Island in Cayuga Lake, and by Mr. Foster H. Saville at an ancient Montauk site known as Soak Hides, near Easthampton, Long Island.—*George G. Heye, Director.*

New York State Museum, Albany, New York

During the fall of 1924, the New York State Museum, through its Department of Archaeology, carried on preliminary field investigations in the counties of Cayuga and Yates.—*Noah T. Clarke, Archaeologist.*

Peabody Museum of Harvard University

Owing to illness contracted in the field while conducting explorations in Arizona, Mr. S. J. Guernsey, the Assistant Director, was granted a leave of absence for the year, and the field-work in the Southwest was continued under the general supervision of Dr. Kidder. Mr. Oliver La Farge, a graduate student of the Division of Anthropology, examined a number of sites in the upper Chinlee region of Arizona. Mr. C. B. Cosgrove carried on extensive excavations among the ruins in the Mimbres Valley of New Mexico, where he obtained an excellent collection of the characteristic pottery of this valley, together with many objects of bone, shell, and other materials. An Indian burial place on the farm of Mr. John L. Waldo in Dartmouth, Massachusetts was explored under the supervision of Mr. Harry L. Shapiro, a graduate student in the Division of Anthropology.—*C. C. Willoughby, Director.*

Phillips Academy, Andover, Massachusetts

The Director of the Department of Archaeology, Mr. Warren K. Moorehead, spent the winter at Natchez, Mississippi, in exploration of mounds and village sites in that region. Some twelve or thirteen mounds were tested, but two of which proved to be burial tumuli. This substantiates Dr. Swanton's able researches among the Natchez. Apparently the larger monuments were constructed as house or temple sites. They are highly stratified. Something like seventy or eighty burials were found in one or two mounds and in village sites. It was possible to save a dozen or more crania which were sent to Dr. Hrdlicka. His report on these will be published at some future date.

A total of about 3,000 specimens were secured, about a thousand of which were presented to the state of Mississippi.

It is interesting to note that sun symbols predominated on the pottery. A further study of the region is recommended to the state authorities.

The Southwestern expedition under the direction of Dr. A. V. Kidder spent four months in excavations at the ruined pueblo of

Pecos, in San Miguel Co., New Mexico. The work consisted in clearing the rooms of two very ancient buildings partly underlying, and partly extending to the west of, the large quadrangle of the historic period. Three kivas were excavated, and about four hundred skeletons exhumed. At the close of the Pecos season, reconnaissance trips were made to the Babicora district of Chihuahua, the Hopi country, and the Canyon de Chelly.—*Warren K. Moorehead, Director.*

Smithsonian Institution, Washington, D. C.

During August and September, Dr. Walter Hough, head curato of anthropology, U. S. National Museum carried on ethnological and archaeological reconnaissance work in Arizona, visiting the Hopi and White Mountain Apache. The archaeological results of the reconnaissance were the location of several hitherto unidentified ruins, notably a large ancient settlement of apparently pre-pueblo age about five miles from Whiteriver, Arizona. A careful examination was made of the numerous picture writings on the rocks in the vicinity of Holbrook. Most interesting of these depictions was a group of snake dancers clothed in archaic custome.

Mr. R. O. Marsh continued during a part of 1924 his work of exploration in hitherto almost unknown regions of the Isthmus of Darien, visiting the Choco, Cuna, and San Blas Indians. A considerable party of scientific men accompanied the expedition, among them Mr. John L. Baer, who was deputed to care for the anthropological work on the part of the Smithsonian.

Throughout the summer months of 1924, Mr. Neil M. Judd, curator of American archaeology, U. S. National Museum continued his investigation of Pueblo Bonito, a prehistoric Indian village in northwestern New Mexico, under the auspices of the National Geographic Society. In these researches there were employed ten white men, six of whom were technical assistants to Mr. Judd, and thirty-seven Indian laborers. The explorations of 1924 mark the fourth season of the five-year Pueblo Bonito project, inaugurated in 1921 after a thorough reconnoissance of the entire Chaco Canyon region. During the years 1921-1923 the Expedition completed the excavation of the eastern and northern portions of Pueblo Bonito. It is in the former section of the ruin that those dwellings last constructed are to be found; in the northern section are slightly earlier houses erected above the razed walls of part of that original settlement which preceded and formed a nucleus for the great communal structure now known as Pueblo Bonito. In 1924 the Expedition confined its principal activities to the western half of the ruin where rooms of both early and late construction exist. From these much new data were obtained.

Archaeological work in Florida was begun at St. Petersburg, Tampa Bay, in the winter of 1923-1924. It was discovered that the prehistoric inhabitants of the Everglade region and the Florida Keys showed scant evidences of a relationship to the Muskhogian culture, but from Tampa Bay north into the other Gulf States, archaeological data supported linguistic evidences of Muskogian influences. Weeden Mound, near St. Petersburg, was excavated by the Chief, assisted by Mr. M. W. Stirling.

Work in Alabama and Tennessee: when the Wilson dam over Tennessee River at Muscle Shoals, northern Alabama, is finished, the back water of the river will flood a considerable section of its banks, covering several prehistoric mounds and permanently concealing them. In order to rescue a typical collection from these mounds before their submergence, the Bureau allotted to Mr. Gerard Fowke a small sum of money for the excavation of a kitchen midden and sand mound at the mouth of Town Creek, a few miles from Courtland. In the sand mound Mr. Fowke found human burials and accompanying mortuary objects. The most important discovery at this mound consisted of three rare copper reel gorgets, only a few of which have thus far been found.

During the year, Mr. Earl H. Morris, at the request of the Chief of the Bureau, did some necessary repair work on the famous Tower of the Mummy Cave House in the Canyon del Muerto, Arizona.

The bringing of a party of eight Tule Indians from Panama to Washington in the middle of October by R. O. Marsh, mining engineer and explorer, has afforded J. P. Harrington, ethnologist of the Bureau of American Ethnology, the opportunity to make an extensive study of the ethnology and language of this little known tribe, said to number some 50,000 souls; Miss Frances Densmore was also enabled to study the primitive music of this tribe. Mr. John P. Harrington, ethnologist, also conducted excavations in the principal village of the Santa Barbara Indians, known to them as Syujtun, to the early Spaniards as El Puerto de Santa Barbara, and in more modern times as the Burton Mound. The great mound which marks the site is situated on the Santa Barbara waterfront, a block west of the principal wharf, on property now belonging to Mr. Ole Hanson and to Mr. Charles Frederick Eaton. The old village site has always been the most prominent feature of the Santa Barbara beach, and is most famous in Santa Barbara Indian and Spanish history, but had never been excavated to any extent previous to the present work. Mr. Harrington returned to Washington, D. C. in February. On April 15 opportunity was afforded for further study of the Kiowa tribe by the coming to Washington of Eimha'a (Delos K. Lonewolf), adopted son of the former head chief of the tribe, and Seitmānten (George Hunt), one of the chief men of the tribe. Work with them was continued until May 21, yielding a great mass of ethnological and mythological material.

Dr. Michelson left Washington towards the close of May and proceeded to Tama, Iowa, to renew his researches among the Fox (Meskwakie) Indians. He devoted especial attention to the various gens festivals, for example, the White Wolf Dance of the War Gens. Some texts on a number of sacred packs were translated. A good deal of general ethnology was obtained in both syllabary texts and translations. Some of this included the regulations of various gentes and societies. Additional information on the White Buffalo Dance and mortuary customs and beliefs were secured. *Condensed from "Explorations and Field-work of the Smithsonian Institution for 1924."*

University of Utah

The Department of Archaeology excavated the cemetery of a pueblo site known locally as "Whiskey Ruin," twelve miles west of Blanding, San Juan Co., Utah, on a branch of Cottonwood Wash. The burials were in sloping ground about twenty yards southeast of the pueblo. There were discovered about thirty skeletons at depths ranging from two to seven feet below the surface. All interments but one were in the flexed position. One skull without body was found. The bones were in such bad condition that none could be preserved. From the graves were recovered about seventy-five pieces of pottery, of which six were corrugated, the rest black-on-white; a few bone awls, arrow-points, scrapers, etc. *A. A. Kerr, Director.*

Victoria Memorial Museum, Ottawa, Canada

Archaeological exploration was carried on in British Columbia by Harlan I. Smith, in continuation of his investigation of the material culture of the Bella Coola both past and present. Two additional petroglyphs were discovered at the site of the most extensive group of these remains known in Canada, that is, on the western side of the cañon a mile south of Bella Coola river some three miles above the mouth. Plaster of Paris moulds were made of two of the petroglyphs at the place and tracings were made of all those that had not been cast. A pictograph on the west side of Dean channel, near Kimsquit, was discovered and photographed. Sites of large rectangular semi-subterranean houses of a prehistoric village were located opposite the mouth of Dean river.

The petroglyphs on the north side of the mouth of Swallop creek on the eastern side of Dean channel, about seventeen miles from its head were mapped and photographed. Plaster of Paris moulds were made of two of the best of them and tracings were made of all the others.

The prehistoric Bella Bella fortification, village site and petroglyphs on the east side of the mouth of Elcho harbour, Dean channel, were also mapped and photographed. The petroglyphs are on boulders on the beach at this place. A plaster of Paris mould was made of the larger petroglyph and a tracing of the smaller. Sir Alexander Mackenzie, the first white man to cross the continent north of Mexico culminated his wonderful trip somewhere in sight of this place. Both the Swallop creek site and the Elcho harbour site are worthy of protection as national monuments. A large pictograph on the north side of Dean channel, two to four miles, west of the Elcho harbour site was also photographed.

Both photographs and motion pictures were taken of archaeological sites including the three Bella Coola villages shown on Mackenzie's map. Mr. Smith learned of the location of a cave said to contain pictographs and ancient ceremonial paraphernalia, in the valley of the Sowiltz, but had no opportunity to explore it during the season.

Mr. Smith lectured twice on the Archaeology and Indians of Canada before the British Association for the Advancement of Science during their visit to British Columbia.

An exhibit illustrating the prehistoric pottery of Canada and another showing aboriginal uses of copper in Canada were prepared by J. D. Leechman and exhibited at Toronto during the meeting of the Birtish Association for the Advancement of Science. He also prepared an exhibit showing the aboriginal uses of minerals, for the meeting of the Canadian Institute of Mining and Metallurgy at Ottawa.

Mr. Smith continued his studies and the writing of his report on the Archaeology of the Bella Coola Indian area and the adjacent

Bella Bella area to the west. He prepared papers on the following subjects:

"A Prehistoric Petroglyph on Noelick river, British Columbia."

"A Prehistoric Earthwork in the Haida Indian Area."

His paper on "The Petroglyph at Aldridge Point, near Victoria, British Columbia," was published in the American Anthropologist, Vol. 26, No. 4, October-December, 1924 (Also separate); one on "Trephined Aboriginal Skulls from British Columbia and Washington," in the American Journal of Physical Anthropology, Vol. VII, No. 4, October-December, 1924. (Also separate). Another, "The End of Alexander Mackenzie's Trip to the Pacific" which refers to archaeological sites and petroglyphs in the Bella Coola valley and on Dean channel, was published in the Annual Report of the Canadian Historical Association for 1924. One on "Unique Prehistoric Carvings from near Vancouver, B. C." has been accepted for publication in the American Anthropologist.[1]

Mr. W. J. Wintemberg continued his study of the culture of the prehistoric Iroquoian village site near Roebuck, Grenville county, Ontario, and the preparation of the monograph on this subject. He wrote an article on "Examples of Graphic Art on Archaeological Artifacts from Ontario," which was published in the Transactions of the Royal Society of Canada, Vol. XVIII, 1924, Third Series. He also prepared a paper on "A Tentative Characterization of Iroquoian Cultures in Ontario and Quebec, as determined from Archaeological Remains," which was read at the meeting of the British Association for the Advancement of Science, in Toronto, and which was published in abstract in the Report of the Association.—*Harlan I. Smith, Dominion Archaeologist.*

A. V. KIDDER

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[1] Published, American Anthropologist, n. s. vol. 27, no. 2, 1925, pp. 315-319. ED.

ANTHROPOLOGICAL NOTES

THE SOCIAL SCIENCE RESEARCH COUNCIL at its annual meeting in Chicago on April 4th announced the appointment of the following fifteen scholars as research fellows of the Council for the year 1925-26, selected from a total of 108 applicants:

Luther Lee Bernard, Ph.D.
  Professor of Sociology, University of Minnesota
  Problem: A study of the development of the social sciences in Argentina with special reference to the economic, political, and other cultural circumstances under which they were developed.
  Place of Study: Argentina.
Charles Warren Everett, M.A.
  Instructor in Department of English and Comparative Literature, Columbia University
  Problem: Life of Jeremy Bentham and the editing of his unpublished manuscripts.
  Place of study: London.
Harold F. Gosnell, Ph.D.
  Instructor in Political Science, University of Chicago
  Problem: Factors determining the extent of Popular Participation in Elections in Typical European States.
  Place of Study: Washington, D. C., England, France, Germany, Belgium.
Marcus Lee Hansen, Ph.D.
  Assistant Professor of History, Smith College
  Problem: A basic study of the origins of the foreign elements in the settlement of the Upper Mississippi Valley.
  Place of study: Washington, Dublin, London, Geneva, Berlin, Hamburg, Bremen.
Joseph Pratt Harris, Ph.D.
  Instructor in Political Science, University of Wisconsin
  Problem: Workings of election registration systems in the United States.
  Place of study: Headquarters at Chicago, field work throughout the country.
William Jaffee, Docteur en Droit
  Tutor in French and Economics, College of the City of New York
  Problem: The Industrial Revolution in France
  Place of study: France.
Edgar W. Knight, Ph.D.
  Professor of Education, University of North Carolina
  Problem: A study of the Folk High Schools in Scandinavian Countries, especially Denmark, Sweden and Finland.
  Place of study: Europe.

Simon S. Kuznets, M.A. (Candidate for Ph.D., June, 1925, Columbia).
  Fellow in Economics, Columbia University
  Problem: Secular Trends in Economic Theory, their inter-relations and their bearing upon cyclical fluctuations.
  Place of study: New York City.
Rose S. Malmud, M.A.
  Graduate student, Columbia University
  Problem: The Psychology of Literary Ability
  Place of study: Columbia University, New York.
Thomas P. Martin, Ph.D.
  Associate Professor of American History, University of Texas
  Problem: A study of Anglo-American Relations as influenced by economic, political and social forces playing within and between the two peoples.
  Place of study: England.
Hutzel Metzger, M.S. (Candidate for Ph.D.. June, 1925, University of Minnesota)
  Part time Research Assistant, University of Minnesota
  Problem: An Analysis of the Price of certain Farm Products, with a view to deriving information that will promote the better adjustment of agricultural production.
  Place of study: Minnesota.
Ernest E. Mowrer, Ph.D.
  Assistant Professor of Sociology, Ohio Wesleyan University
  Problem: Family Disorganization as a Socially Inherited Behavior Pattern.
  Place of study: Chicago.
Mrs. Mildred Dennett Mudgett, Ph.D.
  Assistant Professor of Sociology, University of Minnesota
  Problem: Legislation Affecting the Pre-school Child in certain European Countries.
  Place of study: England, France, Italy, and Scandinavian Countries.
Sterling Denhard Spero, Ph.D.
  Fellow, New School for Social Research
  Problem: The Position of the Negro in Industry.
  Place of study: Headquarters at New York. Field investigations.
Dorothy Swaine Thomas, Ph.D.
  Research Assistant, Federal Reserve Bank of New York
  Problem: The Economic Factor in Crime
  Place of study: New York State.

The fellows will travel and study in the following countries: Argentina, England, Belgium, Germany, France, Italy, and Scandinavian countries of Denmark, Sweden, and Finland.

These are the first awards of the Social Science Research Council. Plans have been made to offer research fellowships annually for the following four years.

The following are the officers of the Council: President, Dr. Charles E. Merriam, University of Chicago; Vice-President, Dr. John R. Commons, University of Wisconsin; Secretary, Dr. Horace Secrist, Northwestern University; Treasurer, Dean E. E. Day, University of Michigan. The Council consists of twenty-one delegates elected three from each of the following national scientific societies: The American Economic Association, The American Political Science Association, The American Statistical Association, The American Sociological Society, The American Anthropological Association, The American Historical Association, and The American Psychological Association.

The Committee on Research Fellowships of the Council consists, of Dr. Wesley C. Mitchell, Chairman, Professor of Economics, Columbia University, Dr. Charles E. Merriam, Professor of Political Science, University of Chicago; and Dr. F. Stuart Chapin, Secretary, Professor of Sociology, University of Minnesota.

ANTHROPOLOGICAL SOCIETY OF WASHINGTON. At the annual, meeting of the Anthropological Society of Washington, D.C., the following officers were elected for the ensuing year:

President: Mr. Neil M. Judd, succeeding Dr. Michelson
Vice-Pres.: Mr. J. P. Harrington, re-elected
Secretary: Dr. John M. Cooper, re-elected
Treasurer: Mr. J. N. B. Hewitt, re-elected
Additional members of Board of Managers:
    Dr. Chas. L. G. Anderson, re-elected
    Mr. Felix Neumann, re-elected
    Mr. Herbert Krieger, succeeding Mr. Judd

DURING the spring the University of Washington sent Erna Gunther to the Klallam, Ronald Olsen to the Quinaielt, and Leslie Spier to the Wishram for general ethnography.

PROFESSOR WOLFGANG KOEHLER, director of the psychological laboratories at the University of Berlin, who conducted the experimentation on the mentality of apes in the Canary Islands under the auspices of the Prussian Academy of Sciences is visiting and lecturing in this country.

DR. GEORGE GRANT MACCURDY of Yale University and the American School of Prehistoric Research has been elected to membership in the American Philosophical Society; he has also been appointed a member of the National Research Council, Division of Anthropology and Psychology. In March he was elected a Correspondent of the Anthropological Society of Rome.

DR. RAFAËL KARSTEN, of Helsingfors, Finland, has completed an extensive study of the Jibaro Indians of Ecuador.

WE REGRET to note the death of William Curtis Farrabee, Curator of the American Section, University of Pennsylvania Museum, on June 24, 1925.

MUSEUM OF THE AMERICAN INDIAN, HEYE FOUNDATION, NOTES. Dr. Melvin R. Gilmore returned to the Museum on January 3, after spending the summer and fall in ethnological work among the Arikara of North Dakota, the Omaha, the Winnebago, the Santee Dakota in Nebraska, and the Pawnee of Oklahoma.

Prof. Marshall H. Saville spent the months of December, January, and part of February in Peru and Mexico where he went as one of the official delegates of the United States Government to the Third Pan-American Scientific Congress. Prof. Saville was made an Honorary Doctor in the Faculty of Sciences of the University of San Marcos of Lima, the first university founded in the New World, and was elected an honorary member of the Instituto Histórico del Peru and the Sociedad Geográfia de Lima.

Mr. Alanson Skinner has returned from a brief sojourn among the Seneca Indians of the Alleghany reservation in southwestern New York, where he attended the "New Year" celebration and obtained a number of unusual old specimens for the Museum's collection.

Doctor Manuel Gamio, who, while a student at Columbia University accompanied Professor Saville as an assistant on the Marie Antoinette Heye Expedition to Ecuador in 1910, has been appointed Sub-secretary of Public Education in the cabinet of President Calles of Mexico. Dr. Gamio has been Director of Anthropology and Inspector of Ancient Monuments in Mexico for some time. The Department of Anthropology has been given control of the National Museum, a consolidation that will be the means, of advancing research in American archaeology to a considerable degree. Plans are in progress for conducting extensive field work in ethnology and archaeology in Oaxaca, similar to that prosecuted under Dr. Gamio's direction in the Valley of Mexico at Teotihuacan. *Indian Notes.*

PROFESSOR A. C. HADDON has resigned from his post of Reader in Anthropology and Ethnology in Christ's College, University of

Cambridge. A dinner was held on the eve of his resignation, May 23, 1925, in honor of his seventy-first birthday.

A NEW PUBLICATION. The newly organized "Linguistic Society of America" issued the first number of its official organ, "Language," in March, 1925. The journal is to appear quarterly and will contain articles of research and comment in the linguistic field. The first issue contains an article by Leonard Bloomfield, "Why a Linguistic Society," and the official records of the organization of the society.

Under the able editorship of George Melville Bolling, Ohio State University, Aurelio M. Espinosa, Stanford University, and Edward Sapir, Victoria Museum, the new journal promises to be one of unusual merit and significance.

The price per annum is $4.00. Subscriptions may be sent to Roland G. Kent, Treasurer, Linguistic Society of America, University of Pennsylvania, Philadelphia, Pa.

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